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# Variations in intermetropolitan migration flows in Canada, 1971-1976 an analysis of some characteristics and causal factors.

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# VARIATIONS IN INTERMETROPOLITAN MIGRATION FLOWS IN CANADA, 1971-1976: AN ANALYSIS OF SOME CHARACTERISTICS AND CAUSAL FACTORS

by

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A Thesis
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1980

## ABSTRACT

Intermetropolitan migration has become the most important trend characterizing migration in Canada after World War II. However, insuffucient migration data has deterred the progress of research on intermetropolitan migration, resulting in a lack of systematically accumulated knowledge on this phenomenon.

The present study attempts to explore the demographic and socio-economic components of the migrant streams between the CMA's, and to examine the factors that account for the variation in migration rates between the CMA's in Canada during 1971 and 1976.

The results of the analysis showed that the migration rate differentials between males and females were not remarkable. Contrary to the past trend, the proportion of female migrants slightly exceeded the male migrants, with the exceptions of long distance migratory streams. The age profiles of intermetropolitan migration flows indicated that the migration rates started rising from 15-24 age group, peaked at 25-34 age group, and followed by a gradual decline up to the ages of retirement. Marked eductional differentials were also observed. Generally, migration rates were higher for the more educated groups, that is, persons with post-secondary or university education.

Results from the regression analysis showed that population size, distance, manufacturing employment and

climate were significant factors accounting for the variation in migration rates between the CMA's in Canada during 1971 and 1976. From the study of residuals, it was found that the Canadian intermetropolitan migration system was divided into four subsystems, covering four regions, namely Ontario, Quebec, Western Region and Atlantic Region; and Quebec was relatively more isolated from the other regions, compared to migratory interaction between other regions.

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# CHAPTER I

## INTRODUCTION

Canada has a very mobile population. About 47 percent of the population aged 5 and over in 1971 changed their residence within Canada at least once during 1966 and 1971 (Chart 1). Out of the 47.4 percent of movers, 23.9 percent are classified as migrants according to Census Canada[1]. These migrants, as defined by Census Canada, include both internal migrants (19.7%) and immigrants (4.2%). Further, the 19.7 percent of internal migrants can be categorized into two groups: (1) intraprovincial migrants (14.0%), and (2) interprovincial migrants (4.3%). These extensive movements of population are of great interest to geographers. Not only migration is important for its impact on regional growth and decline of population and other demographic characteristics and processes, but also for what it tells us about the social and economic interaction among regions.

In Canada, prior to 1960, insufficient migration data had deterred progress of research on intermetropolitan migration (1971, Census of Canada). There was a surprising lack of systematically accumulated knowledge on this

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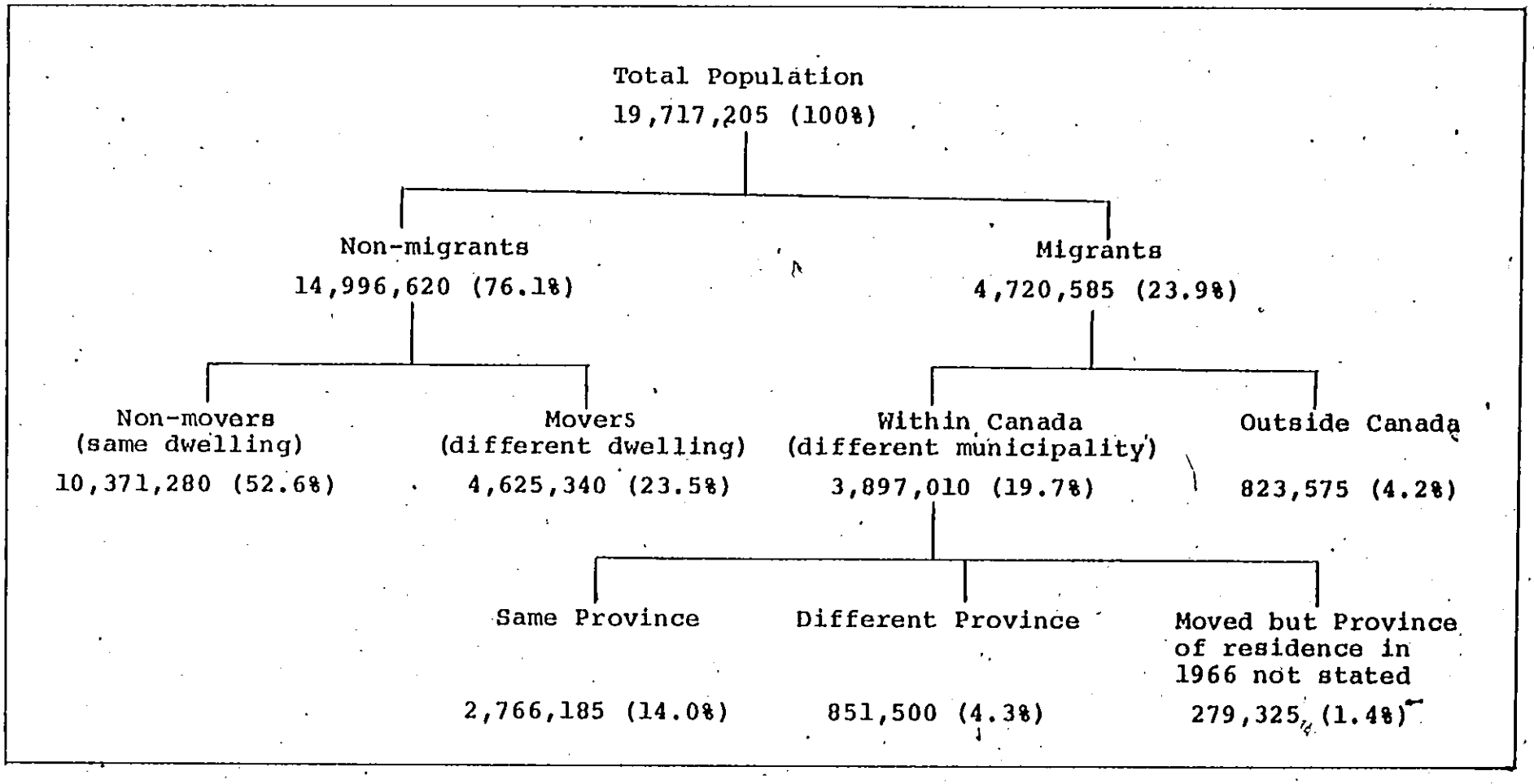
[1] A migrant was defined, in the 1971 Census, as a person who crossed a municipal boundary in the process of changing residence.

CHART 1: MIGRATION STATUS (1966-1971)




SOURCE: 1971 Census of Canada

phenomenon. Since 1961, with the improvement of Census statistics, the scope and analytical precision of Canadian migration studies have increased immensely.

The 1971 Census for the first time provided adequate data for analysing intermetropolitan migration. Most of the studies, using the 1971 Census data, emphasized on the effects of intermetropolitan migration on metropolitan population growth and regional economic development (Yoo, 1975), or the relationship between the occupational composition of migrant streams and the occupational and industrial composition of the CMA (Census Metropolitan Area) labour force (Stone, 1971). There have been relatively few attempts to explore the structure of the migrant streams between the CMA's and to explain why some metropolitan areas gained more migrants than others. The purpose of this research is, first, to explore the demographic and socio-economic components of the migrant streams between the CMA's and secondly, to investigate what factors account for the variation in migration rates between the CMA's in Canada between 1971 and 1976.

## 1.1 Historical Background of Internal Migration in Canada

As stated by Professor Simon Kuznets (1964, p. 368):

> "Internal migration and the redistribution of population by residence among various parts of the country are a major way in which people respond to changing economic opportunities emerging in the course of economic growth..."

Internal migrations in Canada have continued to play an important role in population redistribution in response to changing economic opportunities during the course of Canada's economic growth and development. From 1900 to 1950, urbanization accompanied by rapid economic growth altered the relationship between rural and urban areas, and these in turn resulted in large internal shifts of population from rural to urban forms of living. As a result, the relationship between rural and urban areas had changed. Formerly with an emphasis on subsistence, rural population was relatively independent of urban society. With the change in technology, the rural-urban relationship became closer and intensified.

Changes in the technology of production created a large surplus of rural labour forces, resulting in a substantial decline in average agricultural income (Stone, 1969). In order to solve this problem, the rural economic structures went through two changes. First, some workers were withdrawn from a direct dependence on agricultural activity in order to maintain average agricultural income levels. Secondly, the farm population concentrated agricultural activity on products which had relatively high income and price elasticities of demand and increased the labour productivity by using more land and machineries, and thus, in part, reinforced the withdrawl of the farm labourer.

Since technological change tends to have a selective impact, it induces shifts in the productive system (Anderson,

1966). One of the most pronounced and significant shifts has been the rise in the relative importance of non-agriculture occupations in total economic activity. As a consequence, high levels of renumeration and employment opportunity in non-farm occupations due to rapid urban growth induced movement of both farm labourers and farm family members entering the labour force. Therefore, a push—pull force was generated between the rural and urban areas and thus caused a large inflow of rural population into urban areas.

Starting from 1951, there was a change in the internal migration patterns. First, rural-to-urban migration has been no longer the leading type of internal migration, and it accounted for only 20.8 percent and 16.3 percent of the total migrants during 1951-61 and 1966-71 respectively. This is due to the fact that the rural population cannot drop much further without affecting essential primary production (Minister of State and Urban Affairs, 1976). Secondly, with rapid modernization of the Canadian economic structure during and after World War II, inter-urban migration had become the predominant type of internal migration and accounted for about 56.8 percent and 63.7 percent of the total migrants during 1956-61 and 1966-71 respectively.

Migration tends to take place largely within well defined streams (Lee, 1966). This is because opportunities tend to be highly localized in certain regions, particularly in urban areas. Also, migrants must move along established routes of transportation. Consequently, large movements take

the form of streams which are highly specific both in origin and destination such as migration flows between large urban areas. This is quite true for the migration pattern within the Canadian urban system. The rapid economic development after World War II had a great impact on the growth of metropolitan centres (Stone, 1969). As a result, there was an increasing concentration of economic activities in these centres and an increased interaction and integration among them. This increased concentration of economic activities tended to attract migrants. Therefore, migration between urban places became greater than from rural to urban areas, and large flows occurred between similarly prosperous metropolitan areas (Table 1). Hence, intermetropolitan migration has replaced rural-to-urban migration as the leading type of internal migration in Canada.

## 1.2 The Scope of the Study

The present study is intended to further our understanding of the migration streams in Canada for the most recent period, that is, from 1971 to 1976. Thus, the purpose of this research is first to investigate the demographic and socio-economic characteristics of the intermetropolitan migration streams, and second to explore the factors that account for the variations in the strength of these streams, that is, the relationship between the streams of intermetropolitan flows and the socio-economic characteristics of

TABLE 1: Population 5 years and over, by place of residence in 1966, showing place of residence in 1971, for Canada.

| Place of Residence in 1966 | Place of Residence in 1971 | | |
|---|---|---|---|
| | CMA | Urban Areas | Rural Areas |
| Census Metropolitan Area | 1,220,055 | 296,625 | 265,985 |
| Urban Non-Metropolitan | 416,995 | 347,405 | 258,265 |
| Rural Non-Metropolitan | 266,955 | 283,370 | 226,075 |

SOURCE: 1971 Census of Canada

the metropolitan areas, which make some metropolitan areas more attractive than others to migrants.

By focusing the research efforts on two important aspects of migration, the component of migrant streams, and relative attractiveness at destination, a deeper understanding of the variation in demographic and socio-economic composition among migrant streams, and the relationship between migration and the factors which affect it, is expected.

The 22 Census Metropolitan Areas of Canada[1] are selected as the study area within which certain hypotheses relating to migration will be formulated and tested. The 22 Census Metropolitan Areas are chosen because they are regarded as the most dominant integrated socio-economic and spatial units in Canada today.

A five-year time interval, from 1971 to 1976, is used, based on the latest statistics provided by the Census Canada.

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[1] According to the 1971 Census of Canada, a Census Metropolitan Area is defined as the main labour market area of a continuous built-up area having 100,000 or more population. The main labour market area corresponds to a commuting field where a significant number of people are able to travel daily to work in the main built-up area.

## 1.3 The Study Area

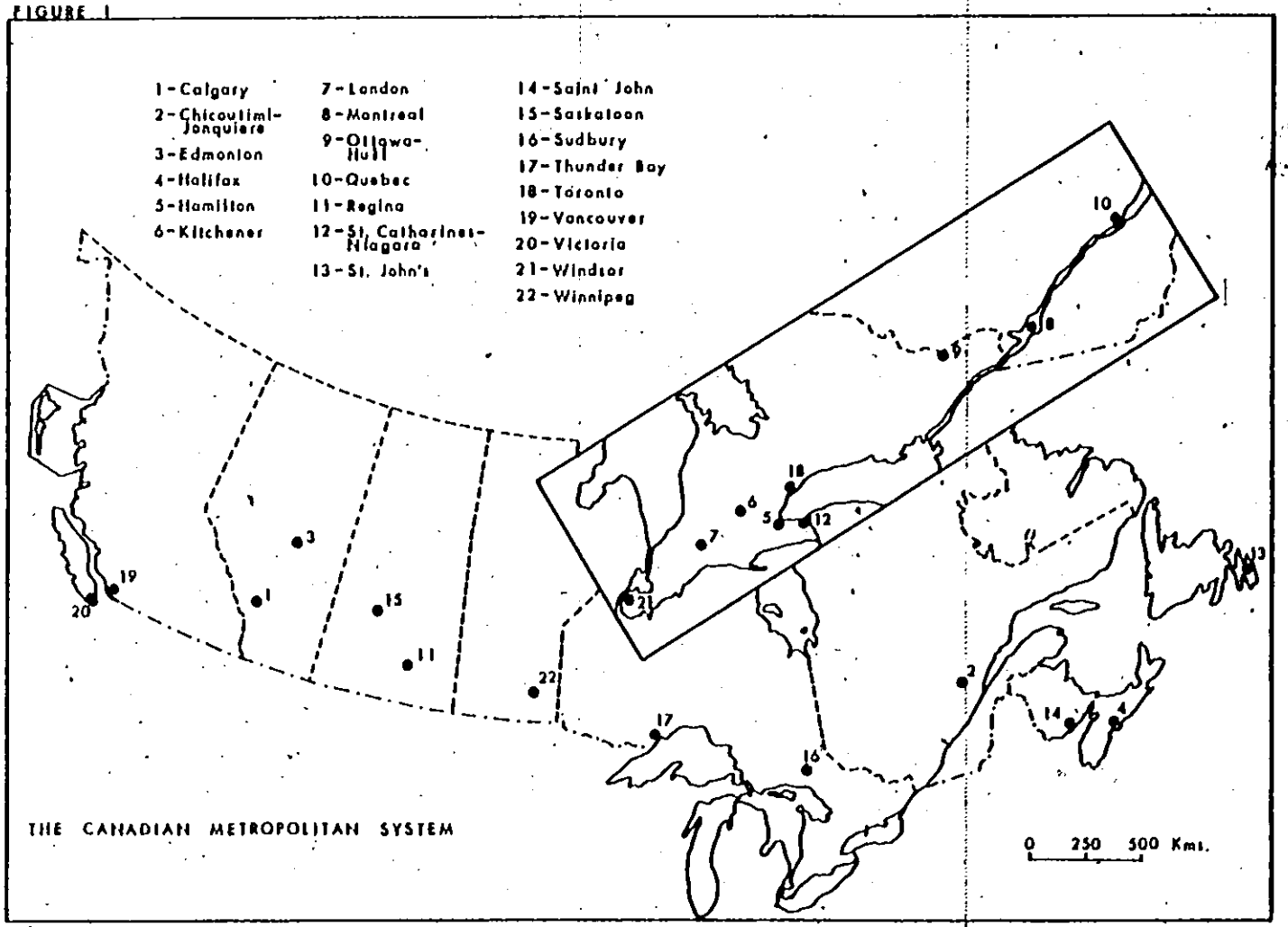
Canada is chosen as the study area (Figure 1). The geographical diversity of the country, including the unequal distribution of both natural and human resources, stands in the way of attaining the goal of equality of income and opportunity throughout the entire nation. Migration does contribute to the continuing spatial inequality in the economy in the sense that population is viewed as the ultimate stimulus to the growth of economic opportunities, both as labour in the production process and as consumer of goods and services (Schwind, 1978). Therefore, the investigation of human migratory behaviour is relevant to the problem of inequality in the economy within the country.

Further, Canada provides an excellent framework for migration study because:

(1) there are few political or social limitations on internal mobility of the population;

(2) the continental scale of the country permits testing of factors that exhibit a wide range of variations such as distance between sources and destinations and intervening opportunities. To a certain extent, the large longitudinal spread of the country with a large area would also create some differences in amenity variables such as temperature and sunshine.

FIGURE 1




SOURCE: SIMMONS, J.W. (1979). THE CANADIAN URBAN SYSTEM: AN OVERVIEW, RESEARCH PAPER No. 104, CENTRE FOR URBAN AND COMMUNITY STUDIES, P.3

## 1.4 Importance of the Present Study

This research will attempt to examine the demographic and socio-economic characteristics of the intermetropolitan migrants, and to develop a migration model for relating migration to a set of socio-economic and amenity factors which appear to account for the decision to migrate to a given metropolitan area.

The results of the present study will provide a background regarding the effects of the selected characteristics of metropolitan areas on intermetropolitan migration; and outline certain theoretical guidelines which can lead to fruitful results in building toward a comprehensive theory of intermetropolitan migration.

A quantitative analysis of migration in this study is significant for an objective understanding of the phenomenon. The regression analysis in the present study can find the appropriate parameters for the interaction model since the variables used in this study are not dependent on migration. Hence, the model can be used to explain the present magnitude and distribution of population movement, and to predict future movement.

There has been a serious concern in Canada with the migration phenemenon as part of a national policy, revolving particularly around the regional disparity issues and issues with respect of a balanced redistribution of the nation's population. Therefore, the findings of the present study

would have important implications for public policy.

# CHAPTER II

## REVIEW OF PREVIOUS STUDIES ON MIGRATION

This chapter presents a review of past research on migration, both theoretical and empirical.

### 2.1 Review of Literature - Theoretical

"The understanding of the pulsating system of spatial interaction is a dynamic field of contemporary geography. The phenomena involved in interactions may be examined by other disciplines, but the geographer approaches such interactions and the spatial network through his emphasis on distance, spatial relations, and areal differentiation" (Hirsch, 1969, pp.1-2).

Ravenstein (1885) was one of the first scholars to recognize the relation of migration to the distance and size of a place. A more precise statement of the distance-migration relationship was presented by Young (1928), who stated that "the relative number of migrants to a given area from each of several areas would vary directly with the 'force of attraction' of the receiving area and inversely with the square of the distance between the source and terminal areas."

The gravity model of migration attempts to express Ravenstein's and Young's concepts into a single simple equation:-

$$Mij = k \cdot \frac{Pi.Pj}{Dij}$$

whereas:

Mij = Migration between place i and place j

Pi = Population at place i

Pj = Population at place j

Dij = Distance between place i and place j

k = a Constant

This model states that migration between any two places is simply a function of the size of the two places and the distance between them.

Stouffer (1940) in an attempt to refine the gravity model, sought to explain the observed relation between migration and distance in terms of "intervening opportunities". His theory stated that,"there is no necessary relationship between mobility and distance...the number of persons going to a distance is directly proportional to the number of intervening opportunities" (Stouffer, 1940, p.846). That is "relations between mobility and distance may be said to be dependent on an auxiliary relationship which expresses the cumulative (intervening) opportunities as a function of distance" (Stouffer, 1940, p. 847).

By casting the relation between migration and opportunities, Stouffer came closer to a model that explained individual mobility behaviour, that is, people moved because of opportunities, and the use of intervening opportunities

as against opportunities at distant places allowed the model to predict a different volume of migration in the stream and counter-stream between these two places. Thereupon, Stouffer made an important contribution to our understanding of migration by viewing it as a response to opportunity.

Lee (1966) in an attempt to review the existing theoretical concepts on migration, developed a theoretical framework that provided further insights into the process of migration and the relations between migration and other variables. His theoretical discussion concentrated on the factors that entered directly into the decision-making process of the potential migrant. He classified them as follows:-

(1) Factors associated with the place of origin.

(2) Factors associated with the place of destination.

(3) Intervening obstacles.

(4) Personal factors.

The factors at origin and destination could be positive or negative factors in that they attracted people to the place or repelled them from it. As Lee (1966, p.50) pointed out that, "some of these factors affect different people in different ways...Nevertheless, we may distinguish classes of people who react in similar fashion to the same general sets of factors at origin and destination."

The intervening obstacles would be simply the cost and burden of moving or sometimes refer to physical, legal

of socio-psychological barriers to migration. The effect of such obstacles varied with the capability and the personal characteristics of the potential migrant.

By bringing forward the fourth set of factors, that was, personal factors, Lee allowed for individual differences in the perceptions and appraisement of the other factors. As he stated:-

> "Personal sensitivities, intelligence, and awareness of conditions elsewhere enter into the evaluation of the situation at origin, and knowledge of the situation at destination depends upon personal contracts or upon sources of information which are not universally available..." (Lee, 1966. p. 51).

Lee used this framework to formulate nineteen hypotheses about the volume of migration, the relations between stream and counterstream, and the selectivity by characteristics of the migrants. The main theme of the hypotheses was that, migration was an adjustment to changing economic and environmental conditions as they affected specific types of people.

Viewing migration as an investment in human capital, the potential migrant would presumably select that locality at which the real value of the expected net benefit that accurued to him from migration was greatest. The advantage of this approach lies in the focus it provides for the analysis of migration, at both theoretical and empirical levels. Most of the empirical studies of the determinants of migration are cast in this framework (Lowry, 1966; O'Neill, 1970; Staastad, 1960; Vanderkamp, 1971). Variables that increase the benefits of migration are expected to have a

positive impact on migration; the opposite is expected to be the case for variables that increase the costs and have a negative effect on migration.

## 2.2 Review of Literature - Empirical Studies

### 2.2.1 Migration Selectivity

An important aspect of the analysis of internal migration is the differentials that are associated with the demographic characteristics of migrants. Various studies have shown that migration is selective, which means that migrants are not a random sample of the population at the area of origin.

A number of personal demographic characteristics exert important influence on the individual's decision to migrate. Among these characteristics are: sex, age, and educational level.

(1) Sex

Generally speaking, males have a higher mobility rate than females.

Over 11 consecutive years in the Current Population Survey in the United States, the results indicated that the total mobility rate averaged about 2 percent lower for females than for males (Sryock, 1964). Additionally, this relationship varied with distance of move. For the inter-state migration, the rate was on the average 6 percent lower.

for females than for males; for the intrastate movement, the rate for females was about 4 percent lower than for males; but for the intracounty mobility, the rates were about the same for both sexes. As Shryock pointed out, this kind of sex differential in migration rates was certainly not surprising in view of the higher labour-force participation rate of males and their greater tendency to attend college.

The 1971 Census of Canada provided the same evidence as found in the United States Current Population Survey. The overall migration rates for females have increased probably because of their growing participation in the labour market. These rates were now almost equivalent to the rates for males; however, males tended to constitute a higher proportion of migrants moving over greater distance (1971 Census of Canada, Vol. I, Table 31).

In a discussion paper, "Canadian urban migration: Analysis of 22 Census Mertopolitan Areas, 1966-1971," Yoo (1975) found that males made up a greater proportion of the entire migrant population than females, i.e. 53 percent verses 47 percent.

Grant and Vanderkamp (1976), using 1968-69 migration data based on taxing province, mailing region, and mailing locality, found that females tended to have slightly higher overall rates than males, however, this appeared to be largely a matter of composition. In particular, the married males in most age groups were more mobile than married females, but, for the unmarried groups, the migration rates

were about the same.

(2) Age

It has long been established that migration is age-selective. The 1971 Census statistics showed that about 40 percent of all interprovincial migrants during 1966-1971 were in the most mobile age group of 20-34 years (1971 Census of Canada, Vol. 1, Table 31). Only 15 percent of the migrants were in the age 45 or over.

The same trend prevailed earlier, from 1956 to 1961, the young adults in the four five-year age groups 20 through 39, were more mobile than the remainder of the population (Stone, 1969).

In his study, Courchene (1974) found that migration rates peaked in the 20-25 and 25-29 age-groups, whereas the 45-64 and over 65 age categories had migration rates that were considerably below the former two groups.

The studies by McInnis (1971), and Grant and Vanderkamp (1976) also supported Courchene's finding. McInnis noted that for interregional migration within Canada, the migration rate peaked in the age-group 25-29, and with the rate for age-group 30-34 remained higher than for the age-group 20-24. For Grant and Vanderkamp, they found that mobility rates were generally higher for the young than for older persons. Peak migration rates were observed for the 20-24 age-group.

This age selectivity in favour of the age-groups of 18-29 years is understandable in view of the fact

that young adults are normally in the transitional period of life-cycle adjustments, from family dependence to independence; from completion of education to selection of a vocation; from single status to marital status (Lee, 1964). Another reason for the high mobility rates of young adults is that younger people are less likely to be bound culturally or by family ties. Lastly, viewing migration as an investment in human capital, it is understandable that for a given income differential, we would expect younger people to be more interested in moving because they have a longer expected working life over which to reap the benefits.

(3) Education

Education has often been viewed as an important determinant of migration, especially for long distance movement. For instance, a marked association was observed between education and migration in the 1961 Census statistics (Stone, 1969).

Similar relations have been observed in other studies (cf. Lee and Varon, 1965; McInnis, 1971), and they all gave support to the view that education was an important socio-economic determinant of mobility.

The Canada Immigration and Manpower Department (1975) reported that migrants tended to have higher educational levels than non-movers, and migrants moving long distances tended to have higher average education than other migrants.

Several reasons have been offered to explain why people with higher education are more likely to move. Firstly,

migration is not equally advantageous for all types of people. The skilled or educated worker is better equipped to compete in new labour markets and can gain more from moving than those who are less skilled or educated. Secondly, insofar as higher education is usually associated with higher income, a person with higher education is probably in a better position to finance a move with a decreased risk of becoming unemployed after the move. Thirdly, education certainly increases a person's capability to obtain information and to use more sophisticated modes of information. Finally, as Schwartz (1973) pointed out that education had an impact on pyschic cost of departure from family and friends. It is likely that higher education groups are more homogeneous over space in terms of culture and manners, and thus find it easier to adapt to new environments.

### 2.2.2 Multivariate Migration Studies

Migration is dependent on a variety of socio-economic and spatial factors and cannot be adequately explained in reference to any single independent variable. A more rational approach would be to measure the relative impact of a variety of independent variables. Hence, the present trend in migration studies toward the development of models through multivariate statistical methods of analysis. By using multivariate regression, the researchers

can employ a set of independent variables, representing the characteristics of an area that are thought to be related to the dependent variable, that is, the migration rates, under examination.

(1) Distance and Population Size

Past research and theory have indicated that there is a strong negative relation between distance and migration, and a positive relation between population size and migration.

Zipf's "Interactance Hypothesis" (1946) stated that gross migration between two places varied positively with the product of their sizes, and negatively with the distance separating the places. Stouffer's intervening opportunities concept (1940) viewed the opportunities in the destination area to be the force of attraction, whereas intervening opportunities between area of origin and area of destination to be the resistance factor. They both showed that frequency of migration between areas tended to be associated positively with the size of the regional population and negatively with the distance between them.

Kelly (1967) studied the effect of metropolitan area attractiveness on intermetropolitan migration in the United States from 1955 to 1960 and related migration rate as the dependent variable with the following variables:-

(1) Highway distance.

(2) Population of the destination SMSA in 1960.

(3) Percent engaged in manufacturing (1960).

(4) Percent unemployed (1960).

(5) Percent of families with incomes under $3,000

at the destination in 1960.

(6) Index of climate (January maximum temperature/ July minimum temperature).

He found that the index of climate at the destination SMSA, population of the destination SMSA, and distance were the three most important variables, and they altogether explained 59 percent of the total variance.

His study indicated that, first, economic variables were not as significant as the "physical" variables such as climate, population size and distance, and secondly, factors at the destination SMSA were more important than factors at the origin SMSA.

In an interstate labour migration study, Gallaway, Gilbert and Smith (1967) found that both distance and per capita income difference were significant determinants of interstate labour movements. In another study by Gallaway (1969), he found that distance had a negative effect on migration, and areas with severe weather tended to repel migrants.

Sweetland (1971), in his study of inter-SMSA migration flows in the United States, found that distance discouraged migration between SMSA's, and migrants moved in response to income differentials, that is, migrants did indeed tend to move away from low-income SMSA's and toward high-income SMSA's. Similar results were obtained from another study by Greenwood and Sweetland (1972).

In a study of interstate migration by Miller (1972),

distance was found to be a deterrent to both in- and out-migrations. The deterrent effect of distance in migration was due to the fact that distance acted as a surrogate for the number of intervening opportunities. That is, a potential migrant in rationally considering migration to a distant area would consider only whether there were any suitable opportunities closer at hand instead of whether these opportunities lay physically between him and the more distant area.

Alperovich, Bergsman and Ehemann (1977) tested a model of intermetropolitan migration using 1965-1970 data for 284 metropolitan areas in the United States from the 1970 Census of Population. Their results indicated that migrants not only responded to economic factors like the unemployment rate, the rate of growth in employment and the wage rate, but also responded to at least two non-economic attributes of the cities to which they move, i.e. mild climate and city size.

(2) Income

A number of multivariate migration studies have found that there is a positive relationship between income and migration, that is, people tend to move to places with higher income.

In a study by Roger (1968) of net migration rates among 80 Southern United States SMSA's over the 1950-1960 period, a 1950 measure of family income of the SMSA was found to be strongly and positively related to the rate of

in-migration, whereas distance was found to be negatively related to the in-migration rate.

Blevins (1969), using the "Push-Pull" approach to analyze the migration rates among twelve Southern United States SMSA's during 1950 and 1960, found out that median income, length of employment, percent of the 1950 labour force employed as clerical and kindred workers, and the percent of the 1950 labour force employed as operative and kindred workers were the most important independent variables which explain variations in net migration using SMSA's.

White (1974) used seven variables to investigate in-migration attraction of 25 cities in Kentucky State and found out that besides the residential preference variable, median family income was also a good indicator of in-migration.

In a study of the determinants of net migration to SMSA's in the United States during 1960-1970, Cebula, Kohn and Gallaway (1973-73) found out that per capita income, unemployment rate, and the mean number of days per year when the minimum temperature in the area was 32 Fahrenheit or below were significant factors in governing the migration among the SMSA's.

(3) Unemployment Factor

Unemployment rate does have a negative relation with migration rate. Bogue, Shryock, and Hoermann (1957) related in-migration, out-migration and net-migration rates to a number of social and economic characteristics for all population subregions in the United States, both metropolitan

and non-metropolitan, for 1935-1940, they found that both in-migration and net-migration rates were negatively related to unemployment rate, whereas out-migration rate was positively related to unemployment rate.

Research using British data by Oliver (1964) confirmed the existence of a negative relationship between unemployment rates and regional differentials in migration rates, that is, there is a strong tendency for areas with high unemployment rates to lose workers and for areas with low unemployment rates to gain workers through inter-regional migration.

In a recent study, Lowry (1966) modified the basic gravity model and incorporated a dimensionless attractiveness factor that depended on relative wages and relative unemployment. The result of his model indicated migration from place i to place j was encouraged by high wages at j and also migration from i to j was discouraged by high unemployment rate at j.

(4) Manufacturing Employment

Labour force engaged in manufacturing can be an approximate measure of the diversity of the economic opportunity and/or economic base of a metropolitan area (Watson, 1959). Since employment in manufacturing is usually the largest single avenue of employment in the metropolitan area, the lower the percentage engaged in manufacturing, the greater the diversity of economic opportunity. And a metropolitan area with a greater diversity of economic opportunities

usually tends to attract more migrants. Hence, higher proportions of labour force engaged in manufacturing could have a negative relation with migration rate.

In a study by Watson (1959) of metropolitan migration in the United States, 1949-1950, it was found that two variables, percentage of population engaged in manufacturing and unemployment rate, were negatively related to both net migration and gross migration rates.

Traver (1965), in his study, "Metropolitan area intercounty migration rates: A test of labour market theory," found that the proportionate number working in manufacturing industries was the second most important variable in explaining the migration rates of persons living in the SMSA's. Intercounty migration rates were inversed to rising proportion of manufacturing workers.

At least three reasons can be given to explain why manufacturing inhibits population migration into the metropolitan areas of the United States (Tarver, 1965). First, manufacturing is not a high-growth sector within the urban sector. Secondly, the educational levels of adults in the SMSA's drop rather steadily as the proportion of manufacturing workers rises. Thirdly, the consistent decline in intercounty migration, as manufacturing concentration mounts, may indicate the rigidities in labour market structure which act as a restraint upon migration.

In Karp and Kelly's study (1971), they found that the percentage of labour engaged in manufacturing in the

the destination SMSA is negatively related to migration rate.

(5) Climate as an Amenity Variable

Several studies have found that climate is a strong stimulant to in-migration of a region. In a study of the interstate and intermetropolitan migration in the United States, Adam (1968) used a January temperature difference as one of the variables in examining the migration process, he found that 56 percent of the 2,550 net interstate flows between 1955 and 1960 were directed toward the states with higher mean January temperature, and similary 58 percent of the net inter-SMSA flows were directed towards similarly warm SMSA's.

In a study of the United States intermetropolitan migration from 1955-1960, Hirsch (1969) found climate to be an important influence in migration to cities of the Western United States and to Florida.

Four questionnaire surveys of Arizona residents, two in the Phoenix area and two in Tucson, indicated climate to be a strong stimulant to in-migration, either directly or through its effect on health (Gilson, 1969).

In a study of out-migration from Chicago-Gary consolidated area to other metropolitan areas, Sanli (1971) found that three climatic variables, that is, the index of climatic attractiveness, the index of climatic severity, and percentage of sunshine, of the destination city, to be the major factors accounting for the proportion of out-migrants

attracted from Chicago to other places.

(6) Summary

The above studies shed light on two important aspects of migration. First, they all indicated that the economic factors were not the only determinants of migration as several other factors also played considerable roles. Secondly, they also suggested that the multivariate regression techniques offered a better method of understanding of the relationship between migration phenomena and the selected set of independent variables.

## 2.3 Canadian Studies

In general, explantory analysis of migration in Canada has been focused upon econometric-type analyses of inter-regional mobility (Stone, 1974). Factors like distance, population size, income level, unemployment rate were found to be significant in explaining migration differentials between regions.

Lycan (1969) discovered that the patterns of Canadian interprovincial migration could be reasonably explained by the spatial distribution of population and socio-economic factors. He stated that, firstly, when the pattern of Canadian interprovincial migrant flows were adjusted to account for the varying population of the provinces, the resultant migration rates could be shown to be negatively related to the effects of distance and

intervening opportunity; secondly, when the effects of population variations, distance, and intervening opportunity were statistically removed from the migration flow pattern, differences in industrial structure, income levels, unemployment levels, investment levels and level of urbanization all appeared to be substantially correlated with the adjusted migration rates.

In a study of interprovincial migration in Canada, Courchene (1970) found out that while migration from province i to province j was a function of the j/i income differential, income at province i alone was not related to provincial out-migration. That is, income of the sending and receiving regions influenced migration differently. Specifically, an increase in earned income per person in province j exerted a strong positive effect on migration from i to j.

Strong support was mustered for the income differential in a study by Laber and Chase (1971) of inter-regional migration in Canada. They developed an "economic opportunities model" of interprovincial labour movement. A regression equation derived from the model contained two independent variables - the expected value of earning differentials and a distance variable. The results of regression analysis showed that both variables are significant in explaining internal migration.

In a study by Vanderkamp (1968) of inter-regional migration in Canada, using family transfer data to measure migration, it was found that migration was attributed largely

to unemployment differentials, that is, unemployment had a significant negative impact on the volume of mobility between regions. This showed that migration was related to net benefits.

Diversity in economic functions is a key factor in attracting migrants (Woodyard, 1972). In his study of inter-regional flows in Central Canada, he found out the specialization in service industries, which reflected a greater diversity of economic function, tended to attract migrants, whereas specialization in manufacturing of any kind had a negative effect on in-migration.

The Canada Census data also suggested that urban complexes that had higher-than-average proportion of the work force in tertiary industries strongly tended to show relatively higher five-year in-migration ratio. In contrast, an increase in manufacturing specialization was associated with decreases in the five-year in-migration ratio (Stone, 1969).

The above review of Canadian migration research displays that most of the studies have been concerned with the explanatory analysis of the regional pattern of migration. Due to the lack of suitable data, less research effort has been made to explore the migration flows in the subprovincial level such as migration between metropolitan areas which includes both intraprovincial and interprovincial movements and forms the largest proportion of all migration flows recorded in the census. Hence, the present study attempts

to fill the gap regarding to the movements among subprovincial regions, in order to gain a better understanding of the migration process in Canada.

# CHAPTER III

## METHODOLOGY

The methodology adopted for a scientific study is by necessity geared to its purpose within certain conceptual framework. In this study, our purpose is to analyse the demographic and socio-economic characteristics of the migrant streams between the CMA's and the relative importance of a variety of factors that account for the variations in the strength of intermetropolitan migratory streams in Canada during 1971-76. As our review of literature reveals, most studies of inter-regional and intermetropolitan migration attempt to test certain hypotheses relating to such variations in migratory streams. Hence, it appears justified to apply some of the accepted hypotheses to the Canadian situation and to establish the degree of their validity.

### 3.1 Specific Hypotheses

Basically, the purpose of the present study would be to test the following hypotheses:-

(1) Male migrants have a higher mobility rate than female migrants.

(2) Mobility rates are considerably higher for young than for older persons.

(3) Migrants with higher level of education are expected to be more mobile than migrants with lower

level of education.

(4) Migration rate and distance are negatively related.

(5) Migration rate is positively related to population of the destination metropolitan area.

(6) Migration rate is positively related to the family income level of the destination metropolitan area.

(7) Migration rate is negatively associated with the unemployemnt rate in the destination metropolitan area.

(8) Migration rate is negatively related to the employment in manufacturing in the destination metropolitan area.

(9) Migration rate is positively related to the index of climate of the destination metropolitan area.

The first three hypotheses seek to examine the demographic and socio-economic components of the migrant streams between the Census Metropolitan Areas. The remaining six hypotheses, concerned with the factors that account for the variations in migration rates between the Census Metropolitan Areas, are incorporated in a model and are tested separately from the first three hypotheses. A detailed discussion of the model is presented in the following section.

## 3.2 Model Specification

Earlier empirical models concerned with

intermetropolitan migration have found several factors to be significant in explaining movement between metropolitan areas. Those factors are distance, population size, income level, unemployment rate, industrial structure and climate.

### 3.2.1 The Model

The model employed in this study is similar to Kelly's model (1967). Variables which were found to be significant in Kelly's model such as distance, population size and climate, are also applied in the present model in addition to unemployment, family income, and manufacturing employment which however were not found to be significant. The model in this study takes the following conceptual form:-

$$M_{i \rightarrow j} = k\left[\frac{P_j}{Dij} \cdot \frac{I_j \cdot C_j}{Uj \cdot Mj}\right]$$

The symbols are defined as follows:-

$M_{i \rightarrow j}$ = Rate of migration from CMAi to CMAj, of persons aged 15 and over, during the period June 1, 1971 to June 1, 1976.

$P_j$ = Number of population at CMAj in 1971.

Dij = Highway distance between CAMi and CMAj, in kilometres.

$I_j$ = Average family income at CMAj in 1971, in dollars.

Uj = Unemployment rate at CMAj in 1971.

$M_j$ = Manufacturing employment rate at CMAj in 1971.

$C_j$ = Climatic index at CMAj.

k = a Constant.

The model becomes linear under logarithmic transformation and is expressed as follows:-

$$\log M_{i \rightarrow j} = \log k + \log P_j - \log Dij + \log I_j - \log U_j - \log M_j + \log C_j$$

3.2.2 The Variables

The variables that are employed in the model, are defined as follows:-

(1) The Dependent Variable

The dependent variable employed in the present study is the number of persons, 15 years of age and over, residing in CMAj on June 1, 1976, who resided in CMAi on June 1, 1971, divided by the total number of persons, 15 years of age and over, who resided in CMAi on June 1, 1971, and resided in all other CMA's on June 1, 1976, i.e. the dependent variable is:-

$$M_{i \rightarrow j} \Big/ \sum_{j=1}^{n} M_{ij}$$

(2) Independent Variables

Of the determinants of intermetropolitan migration, the model in the present study employs six variables: the distance from CMAi and CMAj; the 1971 population of

destination CMA; the 1971 average family income of destination CMA; the 1971 unemployment rate of destination CMA; the 1971 manufacturing employment rate of destination CMA; and the index of climate of destination CMA. A detailed discussion of each variable follows.

(i) The Distance Variable

In previous research, distance was found to be one of the most significant variables in explaining migration. The rationale for the inclusion of distance is that monetary cost of moving varies directly with distance, the longer the distance, the higher the moving costs. Also, the psychic cost of moving associated with the disutility of being uprooted from familiar surroundings also vary with distance. Furthermore, uncertainty probably increases when the destination area is farther away, because the individual's information about the destination probably varies negatively with distance. Hence, one would expect that migration rate and distance are negatively related.

The measure used for distance in the present study is the highway mileage (in kilometres) between the central city of $CMA_i$ and that of $CMA_j$.

(ii) The Population Variable

While past studies of trends in migration showed that the size of a metropolitan area can act as a force of attraction for migrants, it is difficult to specify exactly what this attraction consists of. However, two arguments have been advanced for the significance of the size of a metropolitan area as a force of attraction for migrants.

First, a metropolitan area must reach a certain size before certain types of services are available, some very specialized services being provided only in the largest metropolitan areas. Secondly, a metropolitan area with a large population surely will have a large labour market size. Hence, a metropolitan area with a large population and a large labour market size, ceteris paribus, has a larger variety of job openings and it would send out more "messages" about these opportunities than a metropolitan area with a smaller population and a smaller labour market. As a result, metropolitan areas with larger populations are more attractive to the migrants than others. One would thus expect that migration rate is positively related to the population of the destination metropolitan area.

The population size of each CMA at the beginning of the migration period, i.e., 1971, is used as a measure of this variable.

(iii) The Income Variable

It appears reasonable to believe that, because poeple wish to increase their earnings, other things being equal, they will tend to move towards areas in which the family income is higher. As a consequence, those areas in which the family income is higher tends to attract more migrants from areas with relatively lower family incomes.

Also this factor would become increasingly important where females also are seeking employment in increasing numbers, because higher income levels should indicate increased contribution by the female member/members of the

family. Thus one would expect that migration rate is positively related to the family income level of the destination metropolitan area.

Average family income, referring to the sum of the income received by all members of the family 15 years of age and over, from all sources during a calender year, is used to represent this variable.

(iv) The Unemployment Variable

Economic opportunity is a factor that one would expect to be related to migration since, to a high degree, migration is the result of either a change in jobs or a search for a new job (Kelly, 1967). So it might be argued that higher unemployment rates imply a greater risk element and that this will tend to discourage migration to high-unemployment regions. One would expect, therefore, migration rate is negatively associated with the unemployment rate in the destination metropolitan area.

The unemployment variable is expressed as follows:-

$$\frac{\text{Number of unemployed (1971)}}{\text{Total number of labour force (1971)}} \times 1{,}000$$

(v) The Manufacturing Employment Variable

The proportion of the labour force engaged in manufacturing is an approximate measure of the diversity of economic opportunity of a metropolitan area (Watson, 1959, Kelly, 1967, Woodyard, 1972). Since employment in manufacturing is usually the largest single form of employment in an area, the higher the proportion of the labour force

engaged in manufacturing, the lesser the diversity of economic opportunity. Therefore, a metropolitan area with a higher proportion of its labour force engaged in manufacturing would tend to attract less migrants.

Beside, there are at least three more reasons why manufacturing inhibits population moves into the metropolitan areas. First, manufacturing is not a high-growth sector within the urban economy. Even though there has been some expansion in the number of manufacturing workers, the gains in many of the blue-collar jobs are not as rapid as those in white-collar jobs (Stone, 1969; Traver, 1965).

Secondly, the consistent decline in intermetropolitan migration, as manufacturing concentration increases, may reflect the rigidities in the labour market structure which acts as a restraint upon mobility. Thus, labour unions may prove to be restrictive non-economic barriers to the free flow of labour (Traver, 1965).

Thirdly, a metropolitan centre heavily dependent on manufacturing, particularly of single industry type, might enjoy a low rating for the migrants, having an image of a "lunch-bucket," low culture area and an inferior living environment.

Thus, one would expect that migration rate is negatively related to the employment rate of manufacturing in the destination metropolitan area.

The manufacturing employment variable is expressed as follows:

$$\frac{\text{Number of manufacturing employment (1971)}}{\text{Total number of labour force (1971)}} \times 1{,}000$$

(vi) The Climatic Variable

In an affluent society like Canada, people may migrate not only because of economic factors but also because of amenity factors like climate, recreational facilities, etc.. For this reason, a climatic variable is being introduced in the present study.

It is, of course, hard to determine and to measure what is meant by a "good" or "bad" climate since different people perceive climate differently. Therefore, the only solution is for the researcher himself to arbitrarily define a simple, workable index of "good" climate in the way that he thinks this kind of climate would attract the most migrants (Kelly, 1967).

In general, most people tend to avoid areas with cold bitter winter and hot humid summer. Therefore, places where the "high daily temperature" during the winter is high and areas in which the nights remain cool and less humid in the summer are probably very desirable places to live and would tend to be attractive to the migrants.

The index of climate in the present study, which has been employed in Kelly's study, is expressed as follows:-

$$\frac{\text{High January Maximum (1941-1970) } (^{\circ}F)}{\text{High July Minimum (1941-1971) } (^{\circ}F)}$$

One would thus expect that migration rate is

positively related to the index of climate of the destination metropolitan area.

## 3.3 Data Sources

The matrix of inter-CMA migration flows during 1971 and 1976 is obtained directly from a Census magnetic tape, file number A23618WT, file name: migration matrix - migrants aged 15+, April 12, 1979.

Highway distance between CMA's is obtained from Canadian Highway Map, Canadian Government Office of Tourism, May 8, 1979.

The population data for all 22 CMA's in 1971 are obtained from 1971 Census of Canada, Vol. I - Part: 1 (Bulletin 1.1-8), Population (cities, towns, villages, Census Metropolitan Areas and Census Agglomerations), January, 1973.

Average family income of 1971 for the 22 CMA's is provided in 1971 Census of Canada, Vol. II - Part: 2 (Bulletin 2.2-12), Families (income of families, family heads and non-family persons), March, 1975.

The unemployment statistics for the 22 CMA's in 1971 are obtained from 1971 Census of Canada, Vol. III - Part: 7 (Bulletin 3.7-10), Labour force activity - work experience (industry by sex, weeks worked and unemployment), June, 1975.

Both statistics of total labour force in 1971 and of total manufacturing labour force in 1971 for the 22 CMA's

are obtained from 1971 Census of Canada, Vol. III - Part: 4 (Bulletin 3.3-5), Industries (industries by sex, for Census Metropolitan Areas, place of residence and place of work), May, 1975.

Both the Maximum January Temperature and the Minimum July Temperature for the 22 CMA's are provided in Canadian Normals, Vol. I, Temperature, 1941-1970, Environment Canada (Atmospheric Environment), Ontario, 1973.

## 3.4 Verification Procedure

For examining the demographic and socio-economic characteristics of the migrant streams between CMA's, simple tabulations are used based on the data provided by Statistics Canada.

A multiple regression technique is used to analyse the factors that account for the variation in migration rates between Census Metropolitan Areas. The model of the present study consists of a multiple regression equation in the form $M_{i\rightarrow j} = a + b_1P_j - b_2D_{ij} + b_3I_j - b_4U_j - b_5M_j + b_6C_j$ in logarithmic form. The SPSS stepwise regression program is used for the computation.

The stepwise program deals with each variable incrementally. The one which correlates most highly with the dependent variable will be selected for the first step. Then the partial correlation of the remaining independent variables is estimated and the variable that has the highest

partial correlation coefficient will be added to the regression equation in the following step. This process repeats until either all the variables are accounted for, or the last added variable reduces the "F" level below the program parameters.

The SPSS program provides a correlation matrix for all the variables, an estimating equation at each step selection, a summary table of the step selection process listing the cumulative correlation and $R^2$ at each step, and a list of residuals remaining at the last step.

# CHAPTER IV

# ANALYSIS

In this chapter, while simple tabulations will be used to analyze and interpret the data regarding the demographic and socio-economic structures of the migrant streams between Census Metropolitan Areas, a multiple regression will be performed in the stepwise manner in order to analyze the factors that account for the variation in migration rates between the Census Metropolitan Areas in Canada during 1971 and 1976.

## 4.1 Migration Selectivity

### 4.1.1 Sex

Studies in the past (Yoo, 1975; Grant and Vanderkamp, 1976) have indicated that in the population of all ages combined, males in Canada tended to have a slightly, but persistently, higher share than females among the inter-metropolitan and inter-regional migrants. However, this is not quite true for the intermetropolitan migration in Canada during 1971 and 1976, when the proportion of females slightly exceeded that of males.

Tables 2 and 3, showing the in-migration and out-migration rates of both sexes, indicate that the migration rates of both males and females do not follow any consistent pattern. In-migration streams to Halifax, Sudbury, Toronto,

TABLE 2: In-migration rate,[1] Population aged 15 years and over, by sex, for Census Metropolitan Areas 1971-1976.

| | Male | Female |
|---|---|---|
| Calgary | 38.9 | 37.6 |
| Chicoutimi-Jonquiere | 10.6 | 9.9 |
| Edmonton | 27.7 | 25.5 |
| Halifax | 21.2 | 21.6 |
| Hamilton | 22.8 | 22.9 |
| Kitchener | 28.6 | 28.1 |
| London | 27.1 | 29.6 |
| Montreal | 6.8 | 6.7 |
| Ottawa-Hull | 28.2 | 28.6 |
| Quebec | 11.6 | 11.5 |
| Regina | 23.9 | 23.1 |
| St. Catharines-Niagara | 20.2 | 21.6 |
| St. John's | 11.6 | 10.3 |
| Saint John | 14.1 | 14.4 |
| Saskatoon | 23.4 | 23.3 |
| Sudbury | 12.1 | 13.3 |
| Thunder Bay | 16.2 | 15.9 |
| Toronto | 12.7 | 13.3 |
| Vancouver | 22.3 | 22.9 |
| Victoria | 44.7 | 46.6 |
| Windsor | 10.4 | 14.2 |
| Winnipeg | 14.5 | 14.2 |

[1] In-migration rate:

$$\frac{\text{In-migration rate 71-76}}{\text{Population 1976}} \times 1{,}000$$

SOURCE: Census of Canada, 1976.

TABLE 3: Out-migration rate,[1] Population aged 15 years and over, by sex, for Census Metropolitan Areas, 1971-1976.

| | Male | Female |
|---|---|---|
| Calgary | 23.8 | 23.8 |
| Chicoutimi-Jonquiere | 22.3 | 23.8 |
| Edmonton | 24.1 | 23.3 |
| Halifax | 21.5 | 21.1 |
| Hamilton | 18.9 | 19.0 |
| Kitchener | 23.3 | 21.1 |
| London | 26.9 | 28.2 |
| Montreal | 10.8 | 11.1 |
| Ottawa-Hull | 20.2 | 20.4 |
| Quebec | 16.1 | 17.5 |
| Regina | 32.3 | 34.5 |
| St. Catharines-Niagara | 17.9 | 19.3 |
| St. John's | 13.7 | 15.3 |
| Saint John | 10.6 | 10.9 |
| Saskatoon | 37.3 | 41.4 |
| Sudbury | 28.2 | 26.2 |
| Thunder Bay | 20.0 | 21.5 |
| Toronto | 14.9 | 14.6 |
| Vancouver | 13.1 | 13.1 |
| Victoria | 22.9 | 23.6 |
| Windsor | 19.9 | 19.9 |
| Winnipeg | 21.9 | 22.2 |

[1] Out-migration rate:

$$\frac{\text{Out-migration 71-76}}{\text{Population 76 - Total net migration 71-76}} \times 1{,}000$$

SOURCE: Census of Canada, 1976.

Vancouver and Windsor, and out-migration streams from Chicoutimi-Jonquiere, Montreal, Quebec, Regina, St. John's, Saskatoon, Thunder Bay and Winnipeg, have a slightly higher proportion of females than males. In other cases in both the in-migration to and out-migration from Hamilton, London, Ottawa-Hull, St. Catharines-Niagara, Saint John and Victoria, females again have a higher proportion.

Three main reasons can be offered for this kind of slight dominance of females in the migration streams in 1971-1976, as opposed to earlier trends. First, the labour-force participation of females is fairly high in the present-day urban economy, particularly in the tertiary sector. Therefore, the proportion of female migrants would tend to increase in the migration streams that are directed toward urban areas or between urban areas.

Secondly, the differential in mobility rate between males and females varies directly with distance spanned. The 1971 Census of Canada showed that males tended to constitute a higher proportion of migrants moving over greater distance (1971 Census of Canada, Vol. I. Table 31). In order to examine this phenomenon in 1976, the 22 CMA's were divided into four regions:- (1) Ontario, (2) Quebec, (3) Western Provinces, and (4) Atlantic Provinces. This classification is based on Lycan's regional divisions.[1]

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[1]Lycan (1969), in his study of interprovincial migration in Canada, found that the spatial pattern of interprovincial migration can be mainly divided into four regions, that is, Ontario, Quebec, Western Provinces and the Atlantic Provinces.

TABLE: 4 Percentage distribution of migrants aged 15 years and over, by sex, by place of residence in 1971, showing place of residence in 1976 for Ontario, Quebec, Western Provinces, and the Atlantic Provinces, CMA's

| Origin CMA's | | Destination CMA's: Ontario | Quebec | Western Provinces | Atlantic Provinces |
|---|---|---|---|---|---|
| Ontario | M | 49.3 | 63.2 | 51.6 | 50.6 |
| | F | 50.7 | 36.8 | 48.4 | 49.4 |
| Quebec | M | 48.0 | 49.2 | 50.5 | 49.0 |
| | F | 52.0 | 50.8 | 49.5 | 51.0 |
| Western Provinces | M | 50.2 | 51.4 | 49.5 | 50.9 |
| | F | 49.8 | 48.6 | 50.5 | 49.1 |
| Atlantic Provinces | M | 48.1 | 52.2 | 51.8 | 48.5 |
| | F | 51.9 | 47.8 | 48.2 | 51.5 |

M = Male
F = Female

SOURCE: 1976 Census of Canada.

Table 4 shows the movement pattern between and within Ontario, Quebec, Western Provinces and the Atlantic Provinces. From the table, it is noted that female migrants have dominated over the intraregional movement. But in the case of the inter-regional movements, with the exception of movements from Quebec to Ontario, Quebec to Atlantic Provinces and Atlantic Provinces to Ontario, male migrants predominated. This indicates the fact that short-distance internal migration streams are still slightly dominated by females, while long-distance internal migrants are predominantly males.

Two conclusions arise from this inter-regional movement pattern:-

(1) while in most cases, the dominance of males or females in the migration streams is only slight, migration from Ontario to Quebec is highly male dominated (63.2% versus 36.8%).

(2) similarly, movements from Quebec to both Ontario and Atlantic Provinces, and from Atlantic Provinces to Ontario is female dominated instead of male dominated.

Further investigation is needed in order to explain these exceptional cases.

Finally, nowadays married people seem to move about as much as single people in order to have a larger house for an increasing number of children, or to live in a "nicer" neighbourhood and so on (Rossi, 1955). In this way, family migration no doubt would increase the mobility rate of females.

Hence, the hypothesis that male migrants have a higher mobility rate than female migrants is rejected.

4.1.2 Age

It has been stated that age of migrants is the most significant migration differential. A marked and consistent

relationship does exist between age and the propensity to move.

The general relationship between age and mobility rate is shown in Figures 2(a) to 2(g). The profiles indicate that both in-migration and out-migration rates are higher for the younger age groups, that is, the 15-24 and 25-34 age groups, with a peak at the 25-34 age group. Afterward, the migration rates decline gradually as age increases. Only in a few cases such as the in-migration to London, St. Catharines-Niagara, Victoria, and Windsor, and the out-migration from Saint John, Vancouver, Victoria and Windsor, the phenomenon of "retirement" migration seems to slightly increase the migration rates at age 65 and above. Therefore, the hypothesis that mobility rates are considerably higher for the younger than for the older persons is accepted.

The present study shows that the mobility rate of migrants between the age 25-34 was the highest. This relatively young age group consists of both unattached youths and young married couples. Leaving home to take on a new or better job or seeking a better job, to get married or moving to adjust to the needs of a growing family seem to be the major factors in this relatively high migration rate (Shryock, 1964; Petersen, 1966).

For the middle-aged group, that is, the 35-44 and 45-54 age groups, mobility of any kind is less attractive. It is likely that the constraints of raising a family and establishing pension and seniority rights at work would

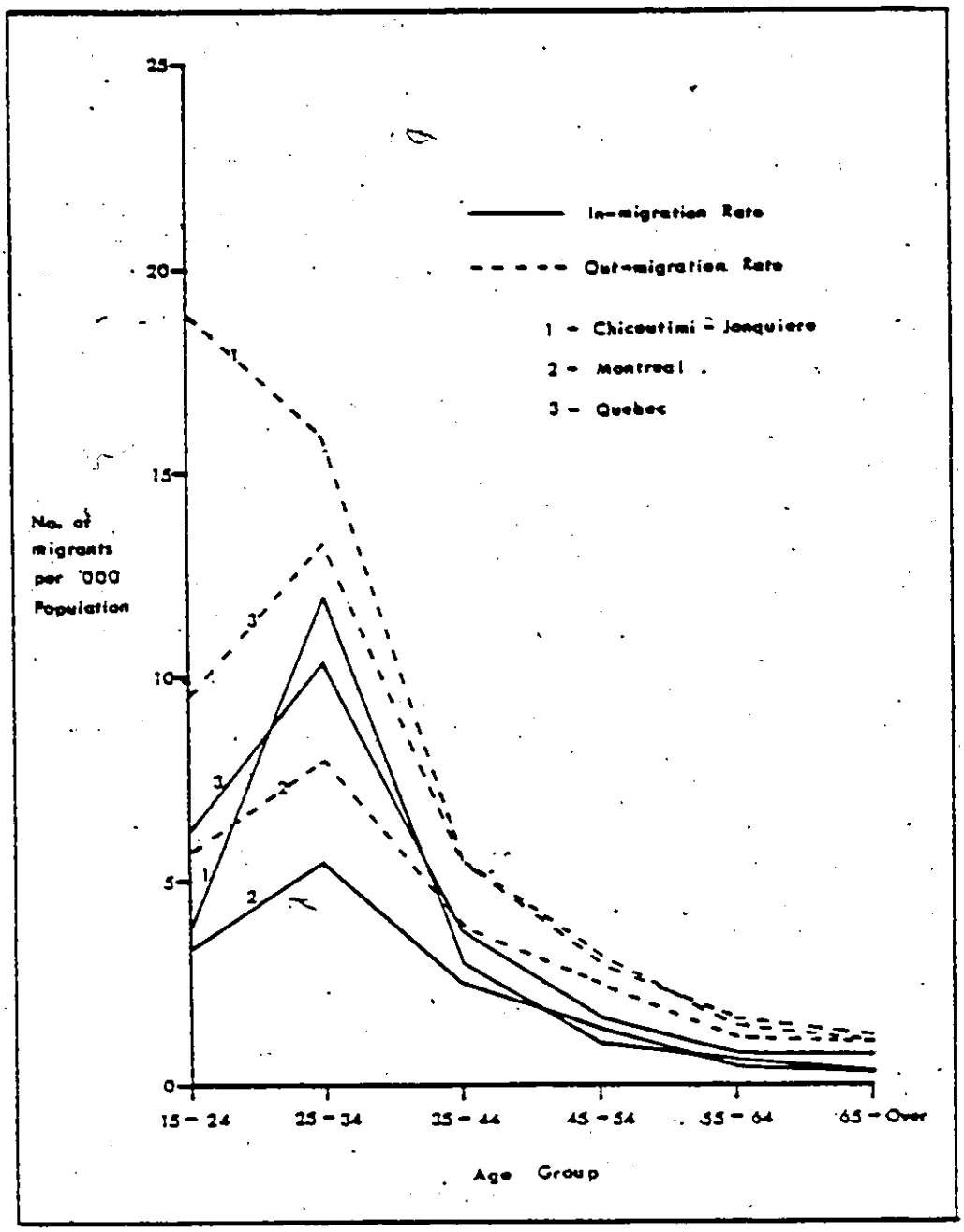



Figure 2a: In-migration and out-migration rates, Population aged 15 years and over, by age groups, for Chicoutimi-Jonquiere, Montreal and Quebec, 1971-1976.

SOURCE: 1976 Census of Canada

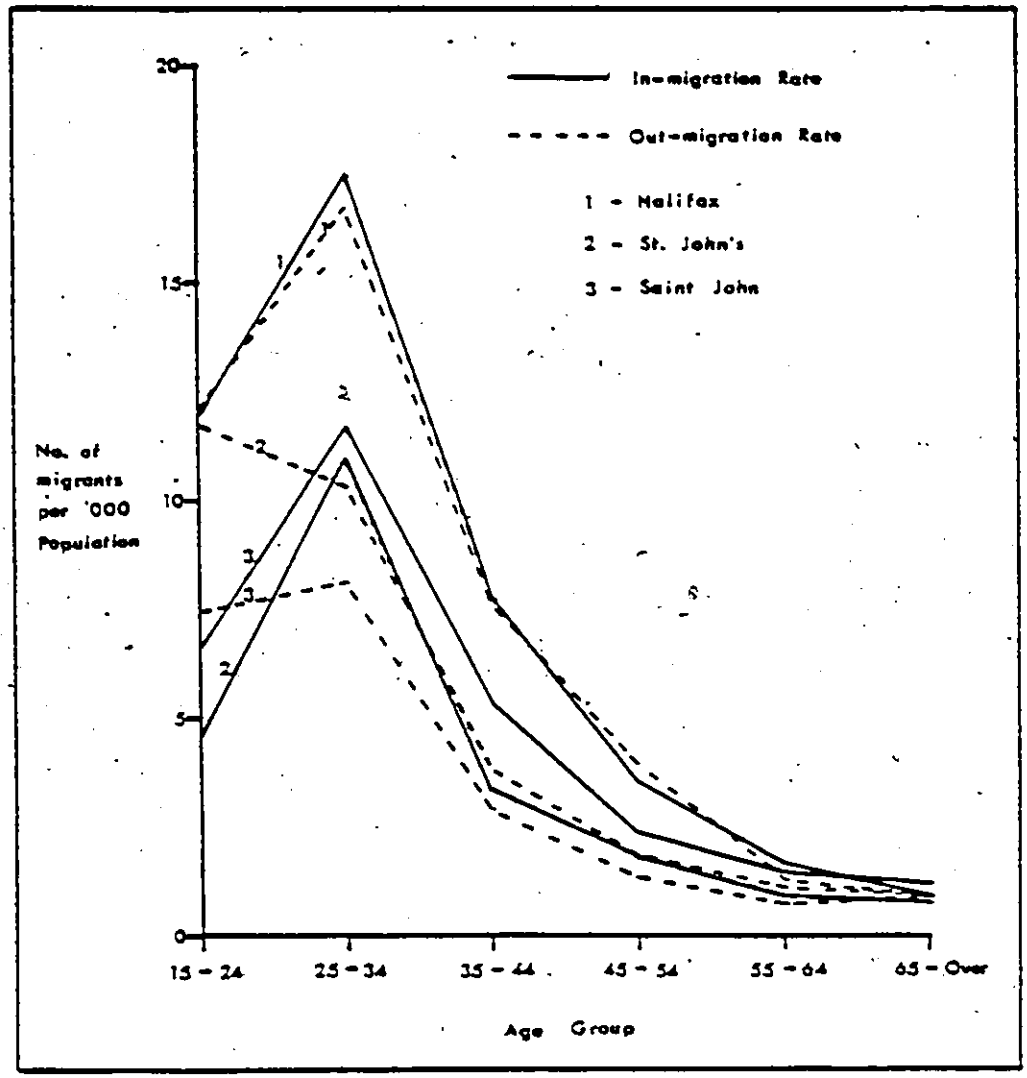



Figure 2b: In-migration and out-migration rates, Population aged 15 years and over, by age groups, for Halifax, St. John's and Saint John, 1971-1976.

SOURCE: 1976 Census of Canada

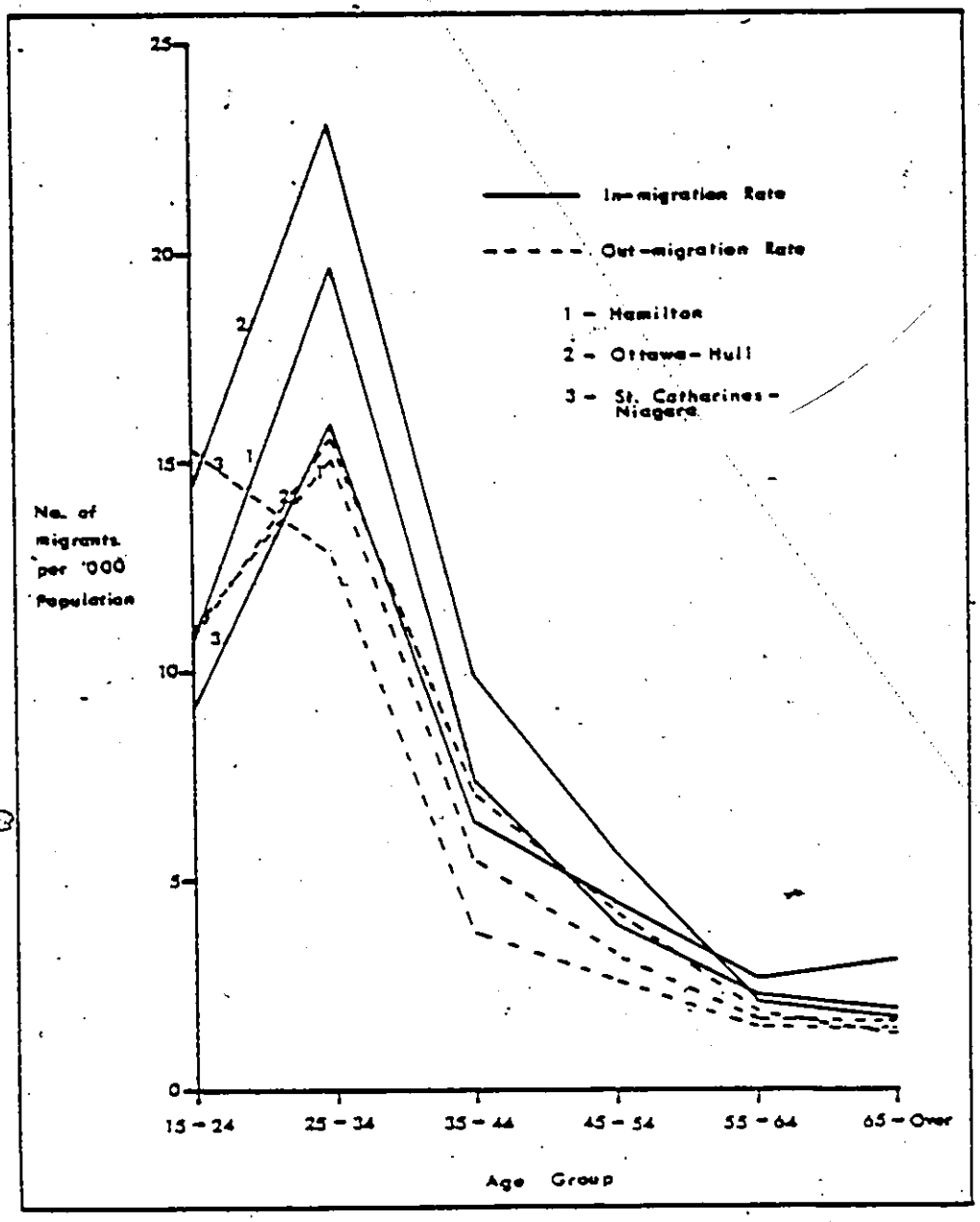



Figure 2c: In-migration and out-migration rates, Population aged 15 years and over, by age groups, for Hamilton, Ottawa-Hull, St. Catharines-Niagara, 1971-1976.

SOURCE: 1976 Census of Canada

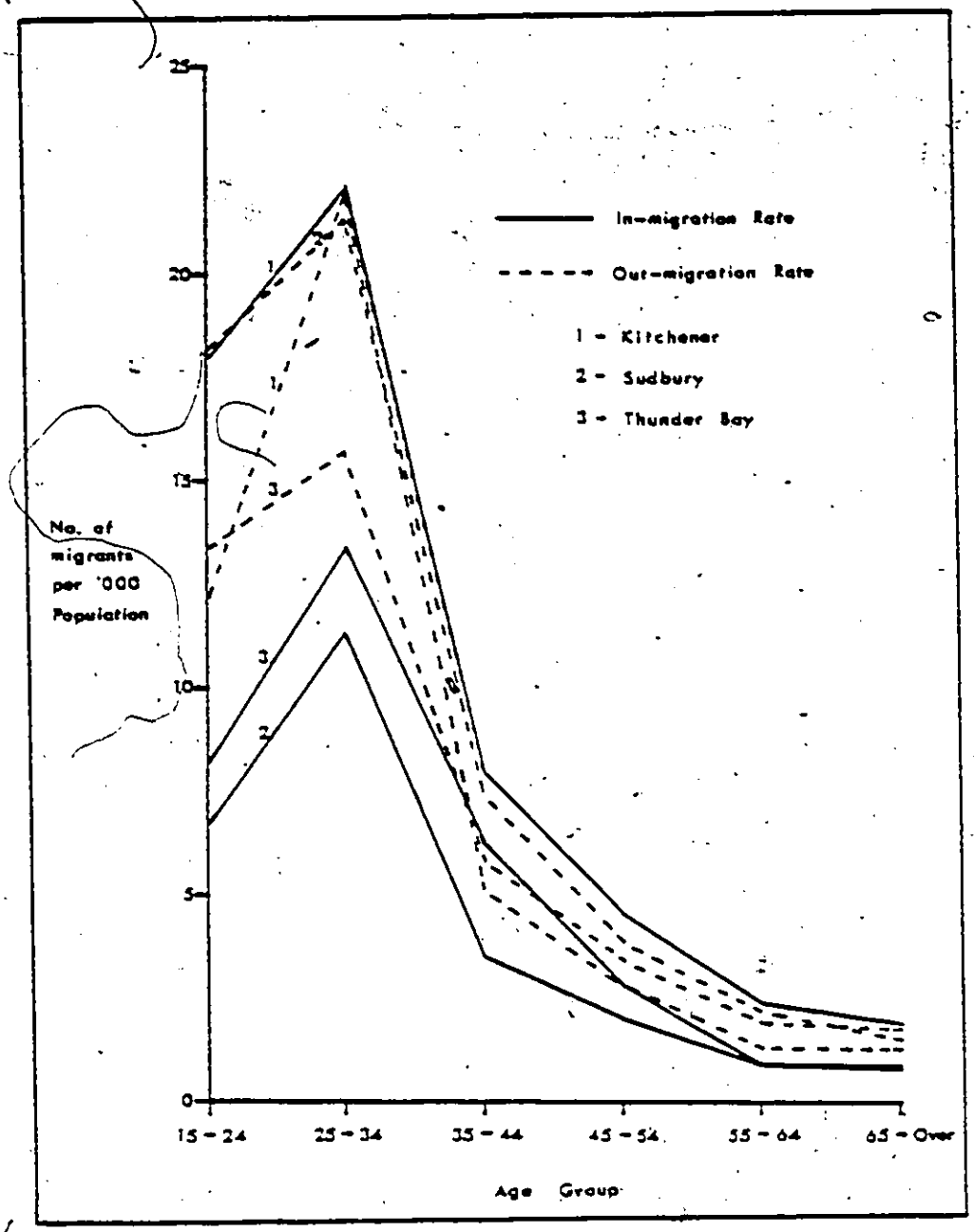



Figure 2d: In-migration and out-migration rates, Population aged 15 years and over, by age groups, for Kitchener, Sudbury and Thunder Bay, 1971-1976.

SOURCE: 1976 Census of Canada

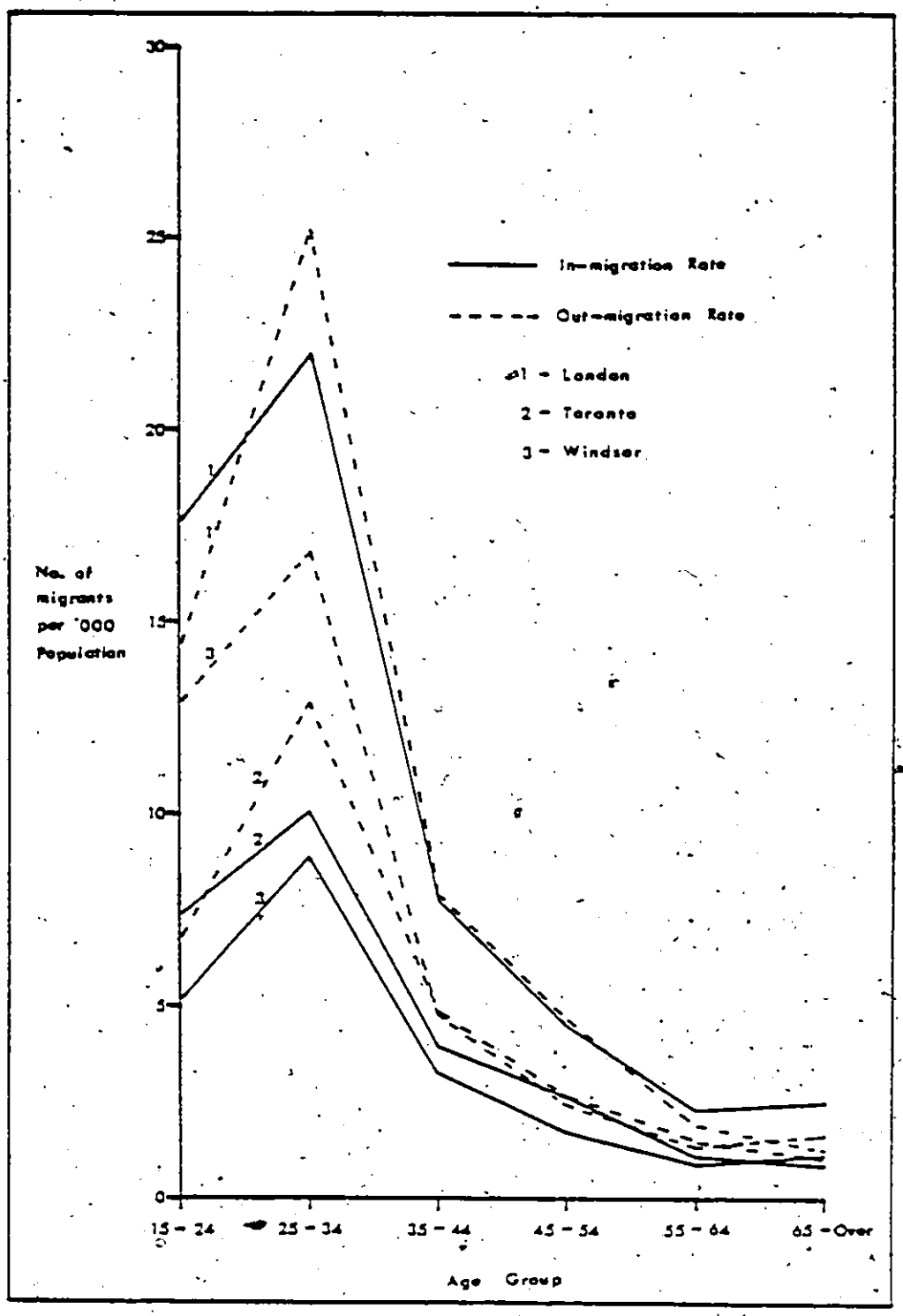



Figure 2e: In-migration and out-migration rates, Population aged 15 years and over, by age groups, for London, Toronto and Windsor, 1971-1976.

SOURCE: 1976 Census of Canada

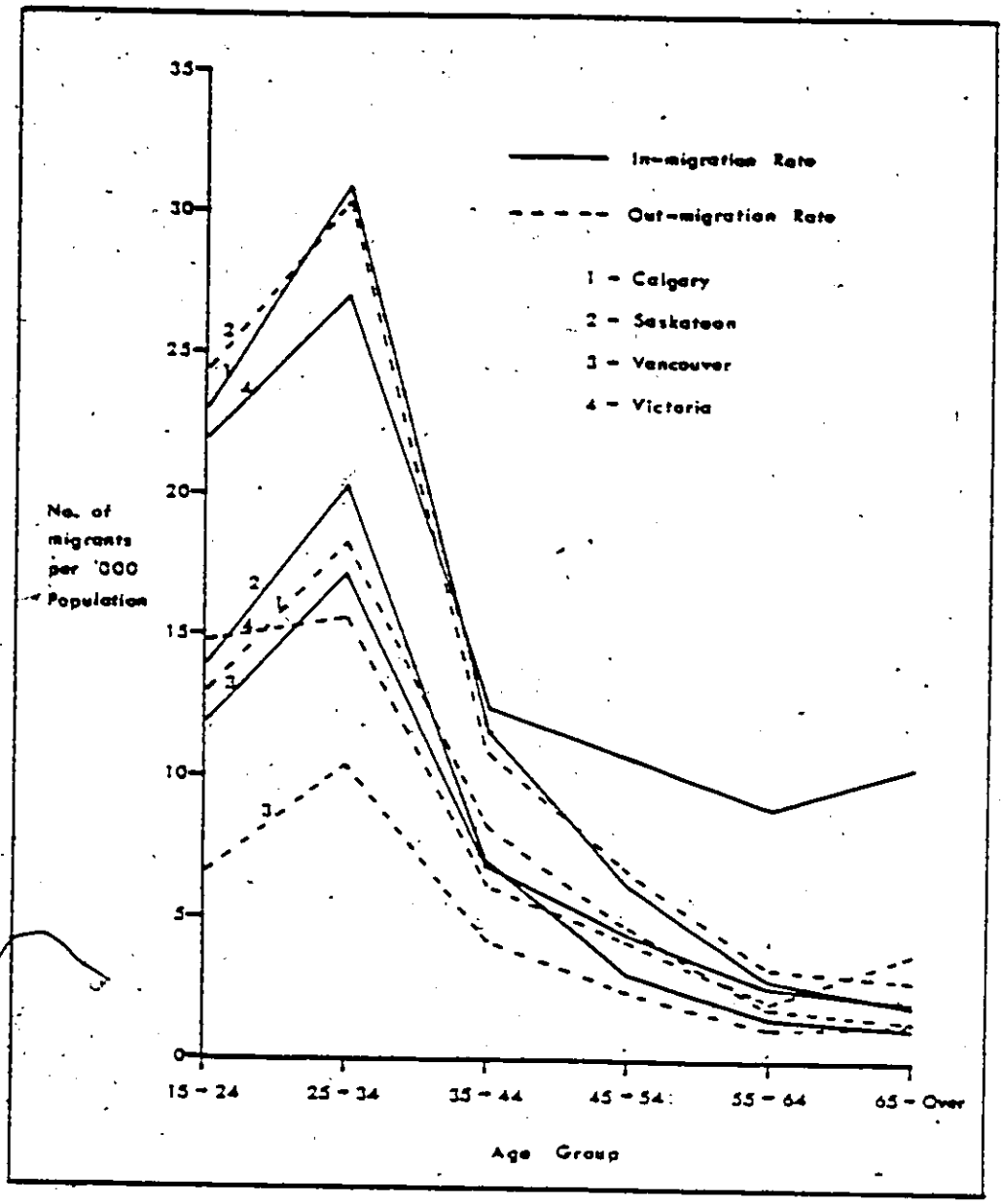



Figure 2f: In-migration and out-migration rates, Population aged 15 years and over, by age groups, for Calgary, Saskatoon, Vancouver and Victoria, 1971-1976.

SOURCE: 1976 Census of Canada

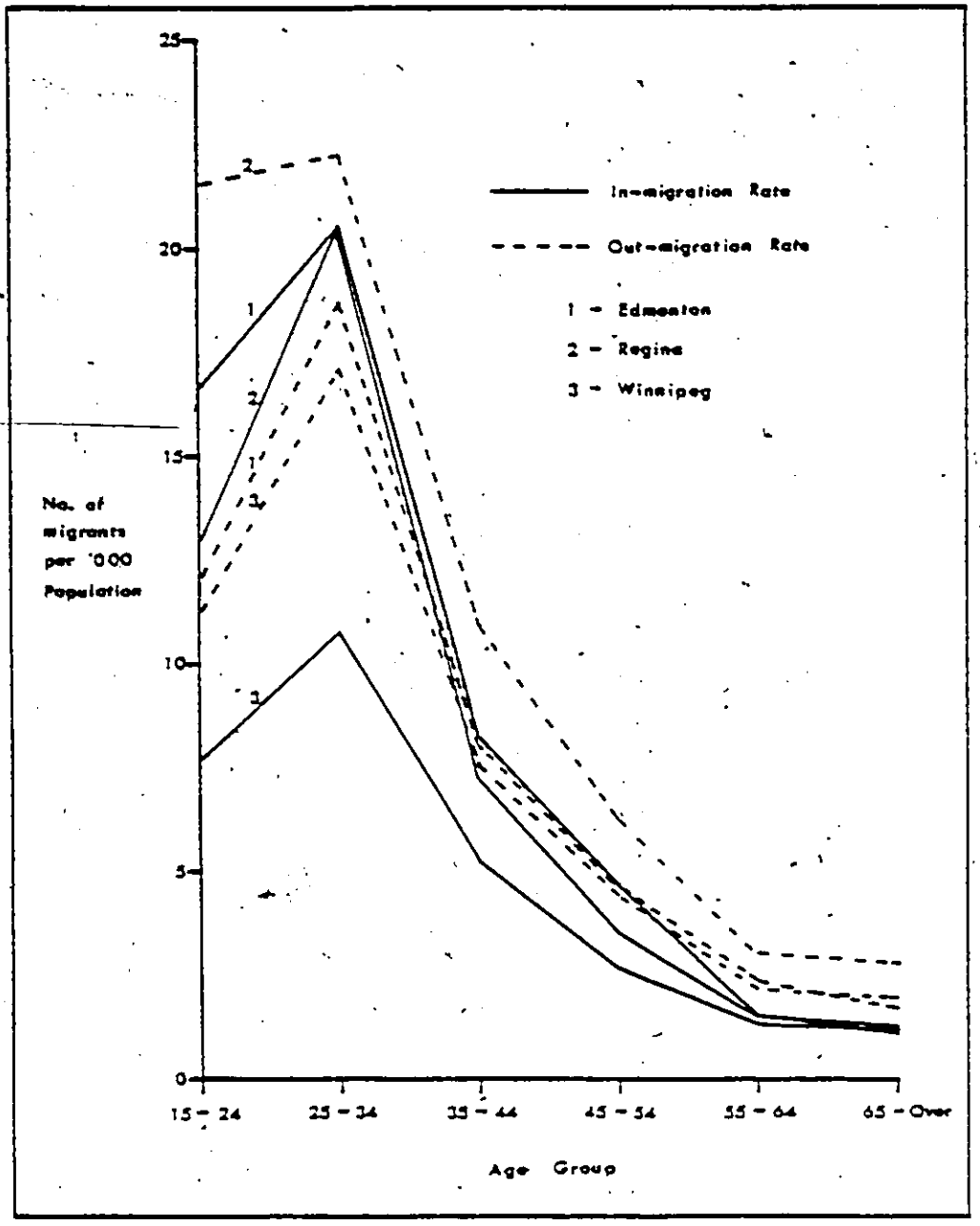



Figure 2g: In-migration and out-migration rates, Population aged 15 years and over, by age groups, for Edmonton, Regina and Winnipeg, 1971-1976.

SOURCE: 1976 Census of Canada

discourage migration. Most movements in these age groups are the result of transfers arranged by employers, such as private corporations and the government offices, but in view of the absence of suitable data, it is not possible to bring out the impact of this factor.

Both the 55-64 and 65 and over age groups have the lowest relative mobility rates. This indicates that increasing age normally implies increasing moving costs, monetary as well as psychological. First, as Lowry (1966) suggested, older persons migrate with the lowest frequency because, compared to younger persons, they are more encumbered by community responsibilities and real estate ownership.

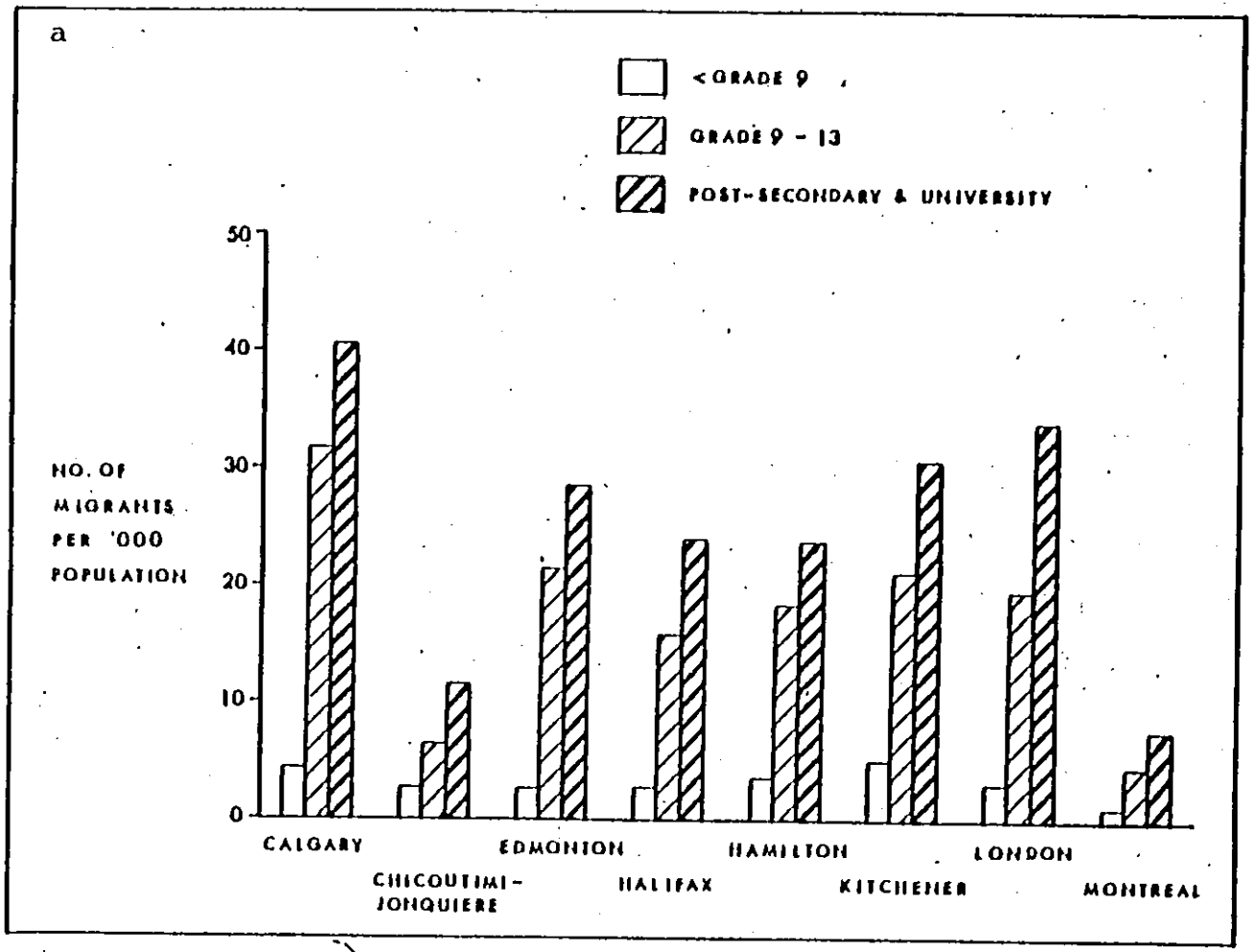
Secondly, job security and familial ties also seem to be more important for older persons than younger persons, and thus will further discourage older persons from moving.

### 4.1.3 Education

Migratory selection process also depends upon educational attainments. People having specialized education and skills migrate more than people with lower level of education and skills.

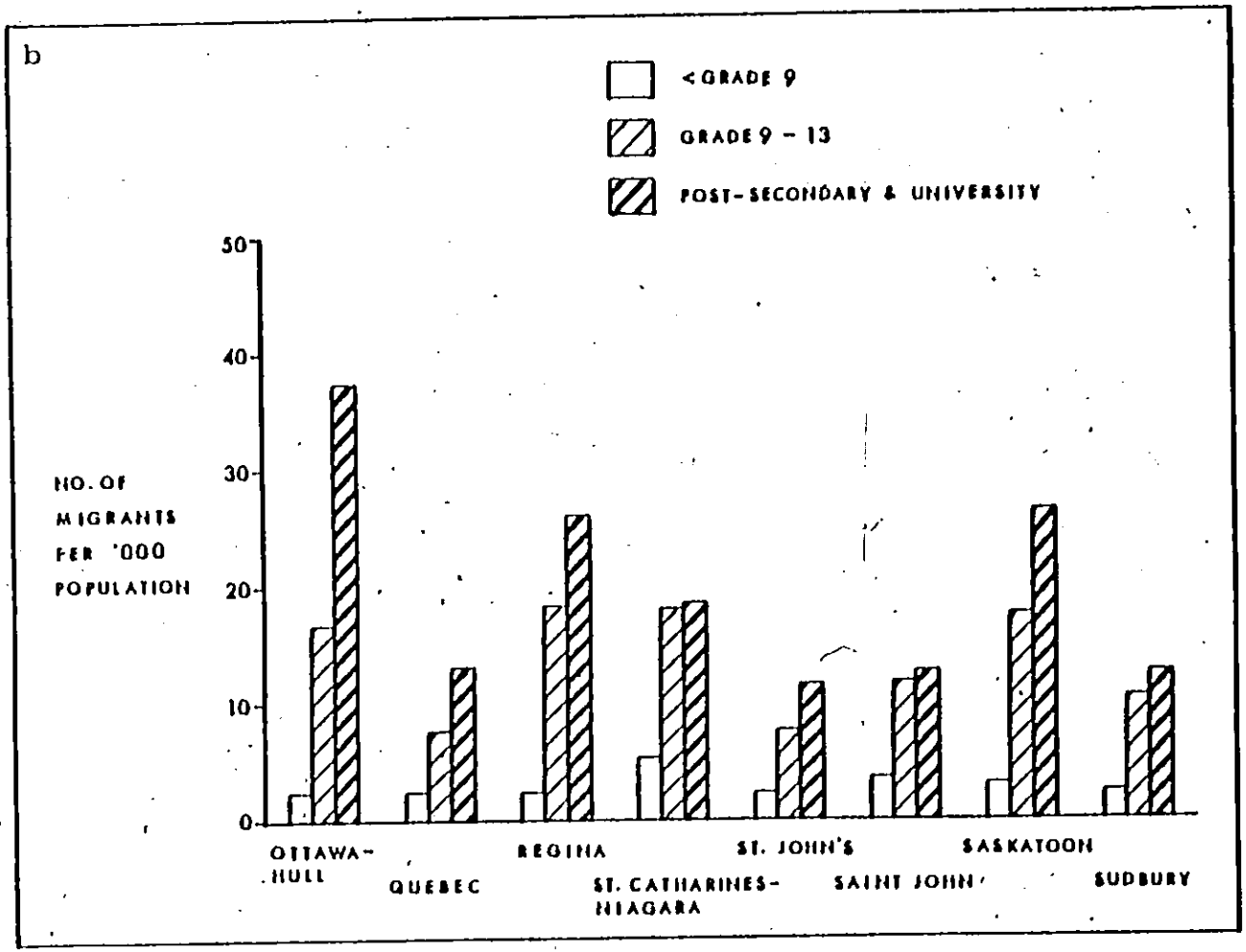
From Figures 3(a), 3(b), 3(c) and 4(a), 4(b), 4(c), it is evident that for both in-migration and out-migration, migrants with university and post-secondary level education have higher rates than those with educational level of

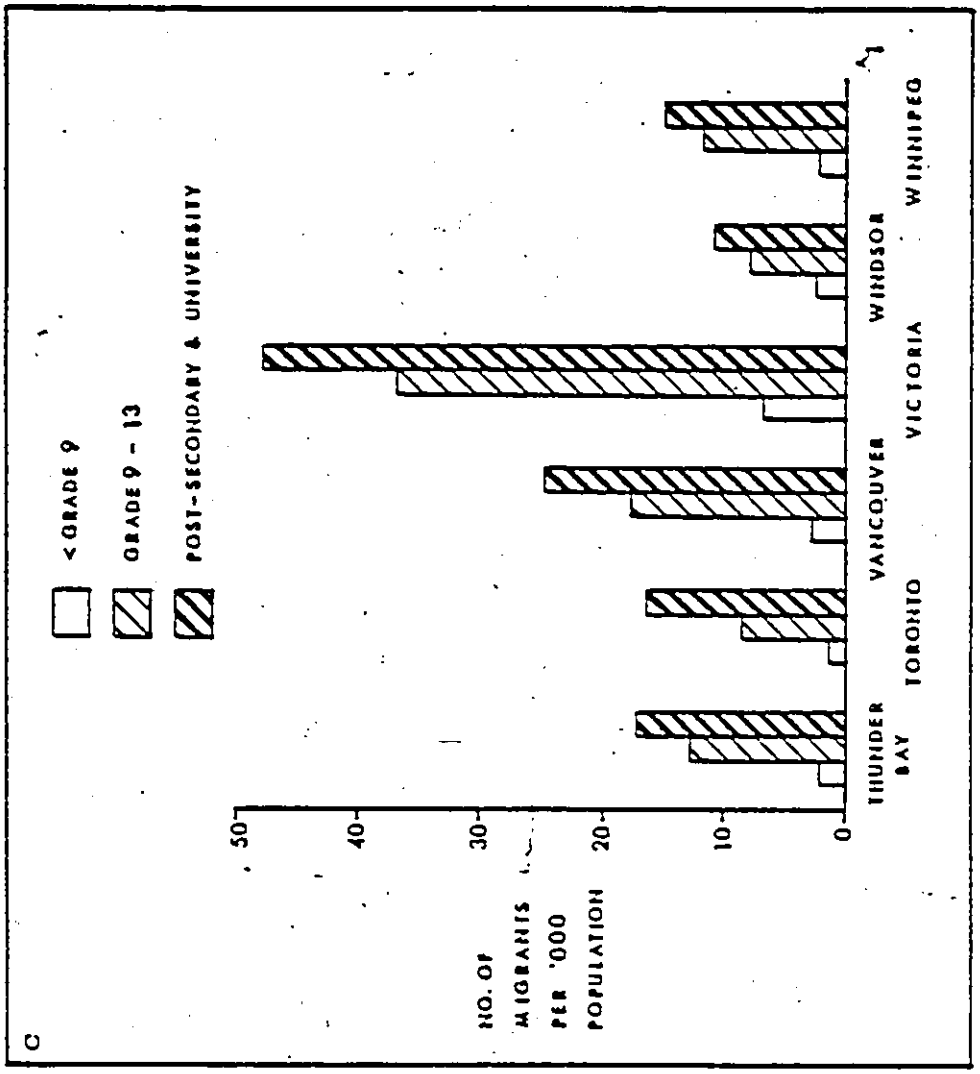
In-migration rate, Population aged 15 years and over, by education levels, for Census Metropolitan Areas, 1971-1976.




Figures: 3a, 3b, 3c

SOURCE: 1976 Census of Canada.


b
< GRADE 9
GRADE 9 – 13
POST-SECONDARY & UNIVERSITY
NO. OF MIGRANTS PER '000 POPULATION
50
40
30
20
10
0
OTTAWA-HULL
QUEBEC
REGINA
ST. CATHARINES-NIAGARA
ST. JOHN'S
SAINT JOHN
SASKATOON
SUDBURY


C
< GRADE 9
GRADE 9 - 13
POST-SECONDARY & UNIVERSITY
NO. OF IMMIGRANTS PER '000 POPULATION
50
40
30
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10
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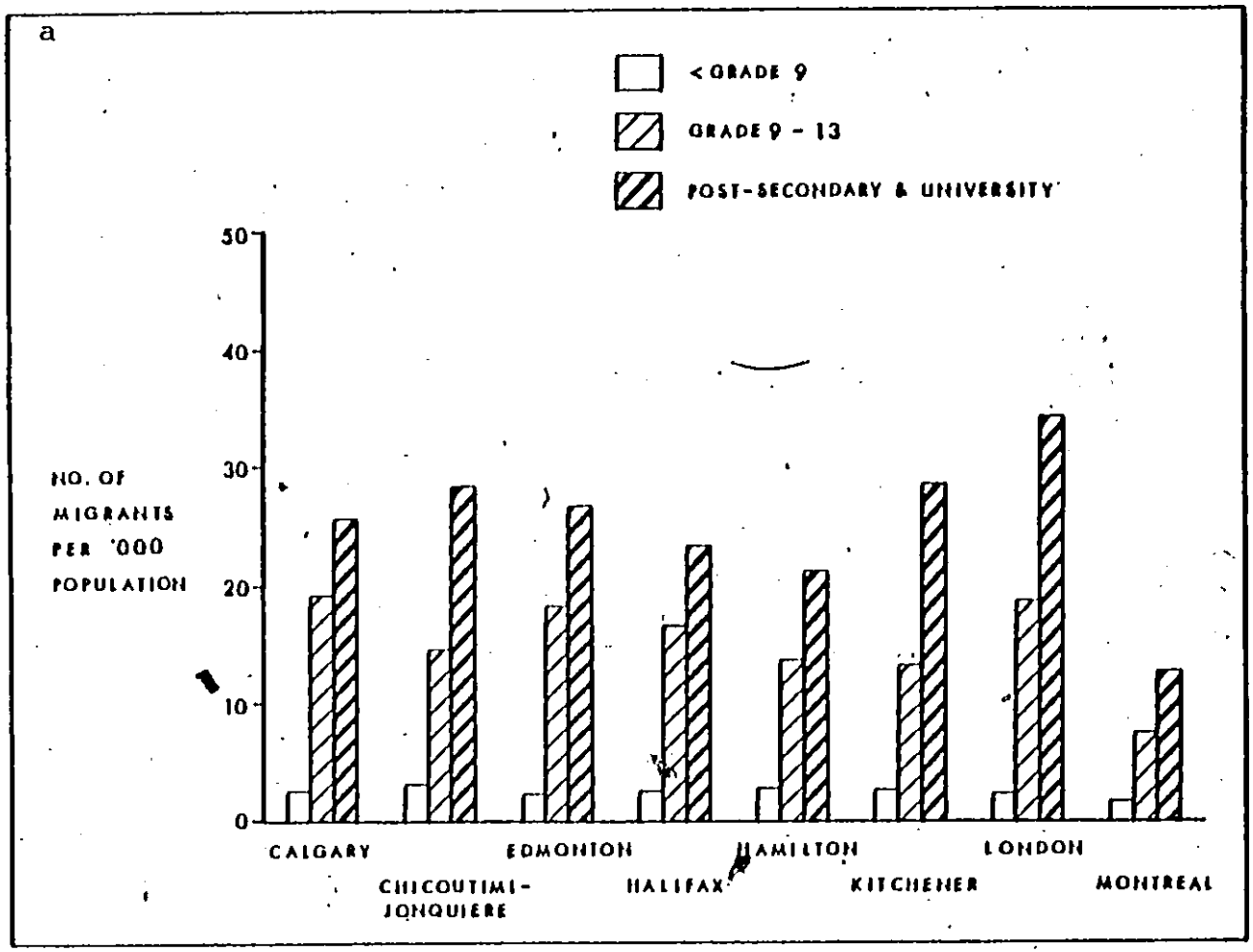
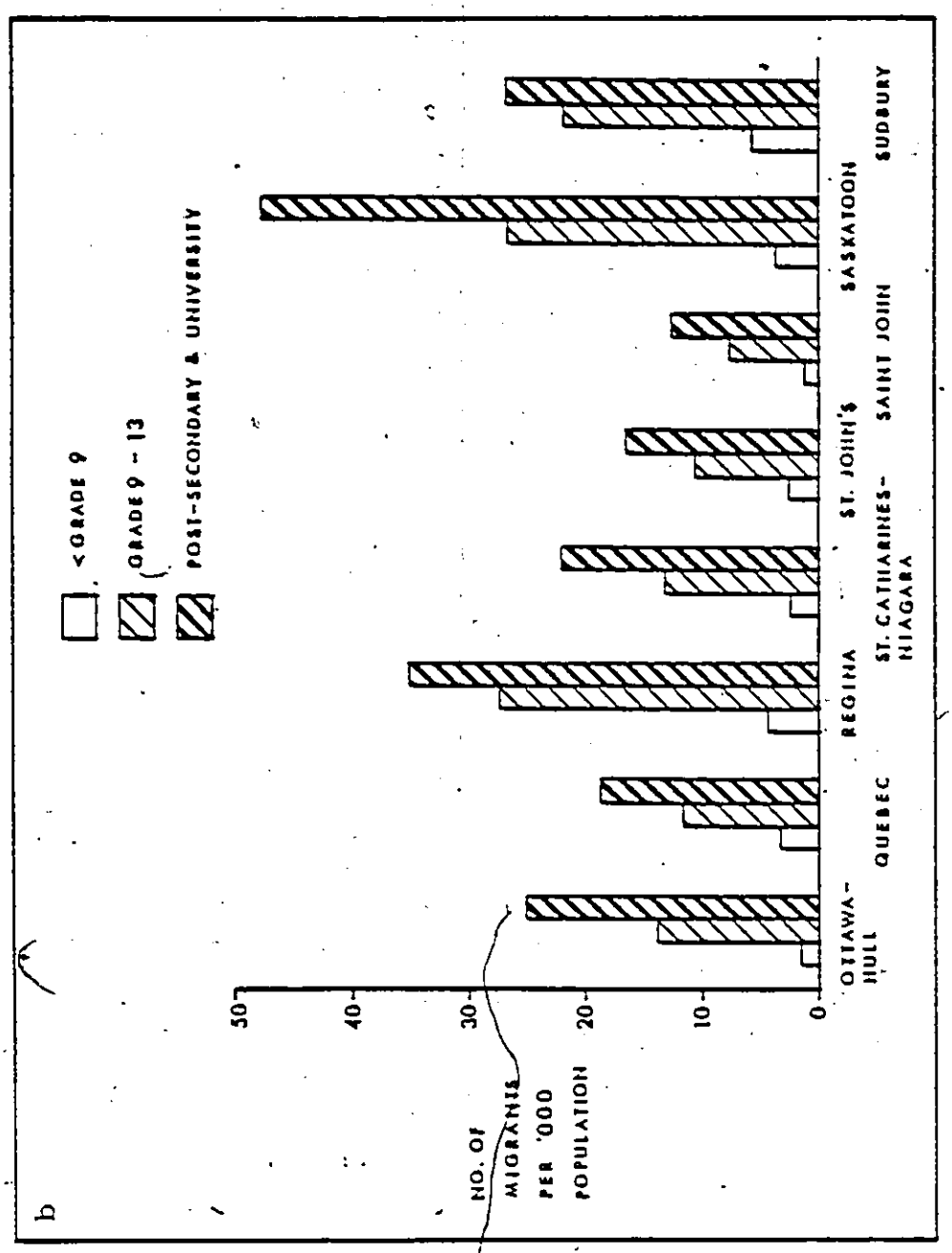
THUNDER BAY
TORONTO
VANCOUVER
VICTORIA
WINDSOR
WINNIPEG

Out-migration rate, Population aged 15 years and over, by education levels, for Census Metropolitan Areas, 1971-1976.




Figures: 4a, 4b, 4c

SOURCE: 1976 Census of Canada.


b
< GRADE 9
GRADE 9 - 13
POST-SECONDARY & UNIVERSITY
NO. OF MIGRANTS PER '000 POPULATION
50
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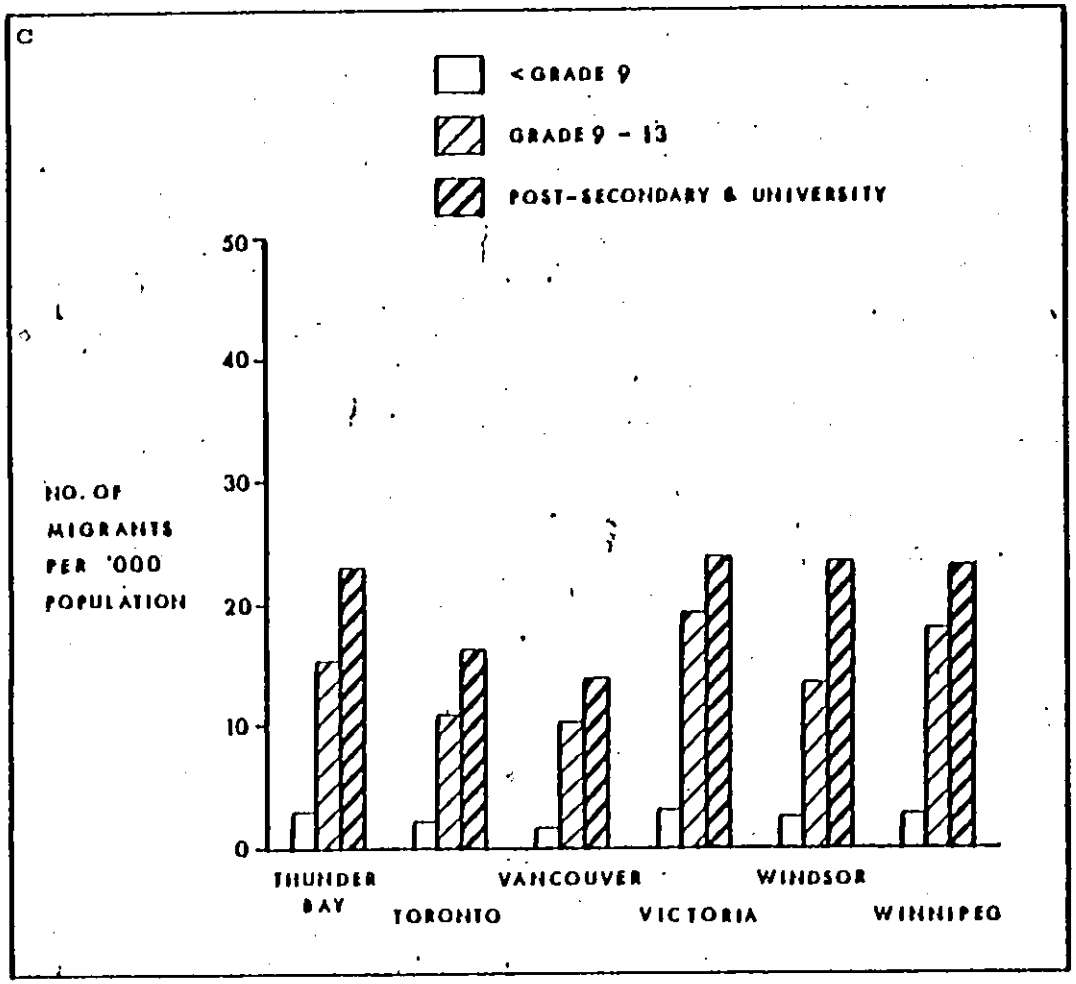
OTTAWA-HULL
QUEBEC
REGINA
ST. CATHARINES-NIAGARA
ST. JOHN'S
SAINT JOHN
SASKATOON
SUDBURY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< GRADE 9
GRADE 9 - 13
POST-SECONDARY & UNIVERSITY
NO. OF MIGRANTS PER '000 POPULATION
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THUNDER BAY
TORONTO
VANCOUVER
VICTORIA
WINDSOR
WINNIPEG

grade 9-13 and less than grade 9. Therefore, the hypothesis that persons with higher level of education are expected to be more mobile than those with lower level of education is accepted.

Education is found to be significant in promoting migration, not only directly, but indirectly by affecting other variables that induce migration, for example, education would increase the immediate as well as the long term income potential of an individual, and reduce an individual's dislike of or disinclination for cultural and social adjustment involved in migration.

Moreover, education would also reduce the importance of tradition and family ties, as also it would increase an individual's awareness of other localities, and weaken an individual's attachment to his present locality.

## 4.2 Summary

In summary, it can be noticed that intermetropolitan migration in Canada during 1971 and 1976 is marked by significant differentials among key demographic and socio-economic groups. The migrants tend to form a distinctive sub-set of the Canadian population.

In line with the previous studies on the Canadian inter-regional migration during 1961 and 1971 (Stone, 1969; Courchene, 1974; McInnis, 1971; Grant and Vanderkamp, 1976), the present study found that the intermetropolitan migrants

tended to be in the young adult age groups and were relatively highly educated. But for the migration rate differentials between both sexes, the present study showed a departure from the past studies (Yoo, 1975; Grant and Vanderkamp, 1976), that is, females make up a slightly greater proportion of the total intermetropolitan migrant population than males, particularly within the four migration sub-regions of Canada.

## 4.3 Multiple Regression Analysis

A summary of the multiple regression analysis is shown as follows:-

TABLE 5: Summary of stepwise regression analysis

| Step | Independent Variables[1] | Beta | Multiple R | $R^2$ | $R^2$ Increase |
|---|---|---|---|---|---|
| 1 | Population of Destination | 0.495<br>F(153.79) | 0.520 | 0.271 | 0.271 |
| 2 | Distance | -0.528<br>F(235.68) | 0.678 | 0.460 | 0.189 |
| 3 | Manufacturing Employment Rate | -0.298<br>F(63.98) | 0.715 | 0.512 | 0.051 |
| 4 | Climate Index | 0.099<br>F(9.39) | 0.722 | 0.521 | 0.009 |
| 5 | Unemployment Rate | 0.135<br>F(11.33) | 0.728 | 0.530 | 0.009 |
| 6 | Average Family Income | 0.067<br>F(2.13) | 0.730 | 0.533 | 0.003 |

[1] Dependent Variable = $\log M_{i \rightarrow j}$

F = F critical

The first variable entered into the multiple regression

equation was the population variable, that is, the population size of the destination CMA. This produced a multiple R of 0.520 and a $R^2$ of 0.271. One variable, thus, explains nearly one third of the variance in migration rates. The relationship between this variable and migration rates is positive, as predicted.

In the second step, the distance variable was added to the regression equation and produced a multiple R of 0.678 and a $R^2$ of 0.460. Hence, two variables already explain nearly half of the variance in migration rates. The relationship between distance and migration rates, as predicted, is negative.

When the manufacturing employment rate was added to the regression equation, a multiple R of 0.715 and a $R^2$ of 0.512 was yielded. Its relationship with migration rates is negative, as predicted.

In the fourth step, the climatic variable was incorporated into the regression equation, producing a multiple R of 0.722 and a $R^2$ of 0.521. The relationship between the climatic variable and migration rates is positive, as predicted.

When the unemployment rate variable was added, a multiple R of 0.728 and a $R^2$ of 0.530 was yielded. However, the relationship between this variable and migration rates is opposite to the predicted direction. This is quite confusing. Up to this step, each variable which was in the equation had a partial correlation with migration rates

and was in the direction predicted. This relationship is not in the predicted direction and does not appear logical.

The interpretation for this unexpected result is, perhaps, that the unemployed form a relatively small percentage of the total population. And the higher unemployment rates are probably to be of most concern to the unemployed and perhaps of little or no concern to those who have a job or an assurance of a job in view when they move, the effects of higher unemployment, therefore, might not be noticeable in the present study that attempts to explain population migration as a whole rather than migration of unemployed persons, data for which are not available (Greenwood, 1975).

The average family income variable entered into the regression equation in the last step, a multiple R of 0.730 and a $R^2$ of 0.533 was produced. Its relationship with migration rates is positive, as predicted.

In summary, using distance, population of the destination CMA, average family income of destination CMA, manufacturing employment rate of the destination CMA, unemployment rate of the destiantion CMA, and index of climate of the destination CMA, it is possible to explain 53.3 percent of the variance in migration rates between the 22 Census Metropolitan Areas in Canada during 1971 and 1976.

## 4.4 Interpretation of Multiple Regression Analysis

All variables in the regression equation, with the exception of the unemployment variable, have the expected signs, and except the family income variable, all are significant at the one percent level.

The population variable in the present study, as in past studies, is positive and highly significant. This shows that population size is a strong force in attracting migrants from one CMA to another CMA.

The population variable acts as a kind of scaler. Generally, metropolitan areas with larger population sizes surely will have a larger labour market for both males and females and will generate a large number of job openings through the normal process of retirement and labour force withdrawals. This then will attract more migrants. Also, larger metropolitan areas tend to provide more specialized services and cultural activities and will attract more migrants than smaller metropolitan areas.

The distance variable in this study is negative and highly significant. Therefore, it would seem that both monetary and psychic costs of migration are important deterrents to migration.

As indicated before, the monetary costs of moving, including both transporation costs and costs of job search, would rise as the moving distance increases. Whereas the psychic costs of moving, consisting of the subjective costs

of leaving families, friends, and familiar environments to venture into unfamiliar localities would vary directly with distance.

The manufacturing employment variable has the expected sign and is significant at the one percent level. This indicates that CMA's with a high proportion of the labour force engaged in manufacturing tend to be less attractive.

This may be due to the fact that CMA's with a high manufacturing employment rate such as Kitchener, Hamilton, Windsor, and St. Catharines tend to have a lesser diversity of employment opportunities, a relatively rigid labour market, and an image of a "lunch-bucket" low culture area. In addition, manufacturing is not a high-growth sector within the urban economy. This altogether will discourage in-migration to an area.

The coefficient of the climatic variable indicates that the decision to migrate is influenced positively by climate. Climate influences migration in two ways. First, as Greenwood (1969) pointed out, not only is climate itself an attractive force, but also the cost of living is lower, if the climate is more temperate. Secondly, when an area is expected to grow because people like the climate, then business will expand in order to provide sufficient services for the expanding population, and the consequent employment expansion will stimulate further in-migration (Svart, 1976).

However, Kelly's index of climate that has been used

in this study, does not seem to be so impressive. In Kelly's study of intermetropolitan migration in the United States, this climatic variable accounted for nearly one third of the total variance in migration rate, while in the present study, it can only explain about one percent of the total variance. So why was the climatic variable important in Kelly's study and less important here?

Two explanations seem likely to account for the difference. First, it may be due to the fact that the variation of temperature among the 22 CMA's is not as great as that of the SMSA's in the United States since all the CMA's are lying in a latitudinally narrow and elongated belt across the country.

Secondly, since only temperature is used to derive the climatic index, it is possible that the climatic index in this study does not consist of the critical climatic elements that might have a great variation among the 22 Census Metropolitan Areas. Therefore, Kelly's climatic variable can only explain a very small amount of the total variance of migration rate in the present study.

The coefficient of the unemployment variable as indicated earlier, is positive and opposite to the predicted sign. Therefore, the significance of any possible negative relationship cannot be hypothesized from the results obtained.

This may be due to the fact, as mentioned before, that the negative effects of high unemployment might well not

be apparent in studies that attempt to explain migration of aggregate numbers since only certain categories within these aggregates would be affected by unemployment levels in the destination. Secondly, the 1971 unemployment rate level, which was used in the present study apparently does not precisely reflect the employment pattern of the 22 CMA's throughout the 1971 and 1976 period.[1]

Finally, the coefficient of the family income variable is positive but is insignificant at the one percent level. Accordingly, the present study fails to set up any important relationship between family income and migration rate. This may be because the potential migrants are not only sensitive to the present net benefits from migration, but also are concerned with the long-run earning, and so employment possibilities may be more important than the immediate income level. Also, income level can become more relevant if the potential migrants have some information about costs of living in comparison with income. Hence, income alone as a variable has not proved to be useful in our analysis. Thus, this variable, which adds very little to the explained variance, about 0.3 percent, is practically worthless.

## 4.5 Study of Residuals

All studies that use multivariate analysis cannot

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[1] It is likely that chronic unemployment as revealed by the rates for 1971 to 1976 period might show the expected negative correlation with migration rates, however, the available data are not adequate or refined enough for such an analysis.

eliminate all unexplained variance, the present study is no exception. The regression model can only explain about 53 percent of the total variance, leaving nearly half of the unexplained variance. Before investigating further the possibilities for explaining the remaining variance, an analysis of residuals from the regression equation is necessary. The purpose of analyzing the residuals is to distinguish observations which lie some distance from the best-fit linear trend. The residuals may show deviant cases or may suggest further independent variables which ought to be taken into consideration (Taylor, 1977).

In the present study, the standard error band will be the 1.00 level and migration streams which lie more than +1 S.E. or less than -1 S.E. will be examined. The advantage of this level is that more migration streams are included, thereby helping in the discovery of any particular movement pattern.

Tables 6 and 7 show that 26 migration streams are underpredicited and 22 migration streams are overpredicted respectively. From the direct observation of these 48 migration streams, two distinctive features of migration patterns are found. First, the system of intermetropolitan migration is sub-divided into four major, distinct regions:-[1]

[1] Yoo (1975), in his study of intermetropolitan migration in Canada during 1966 and 1971, found that the internal migration streams were polarized in three main blocs, viz: (1) the Western bloc with Vancouver, Edmonton and Calgary as the focal points; (2) the Central bloc with Toronto and Montreal as the focal points and (3) the Atlantic bloc.

TABLE 6

26 migration streams which are underpredicted (+)

| | From | To |
|---|---|---|
| 1. | Edmonton | Calgary |
| 2. | Regina | Calgary |
| 3. | Saskatoon | Calgary |
| 4. | Calgary | Edmonton |
| 5. | Saint John | Halifax |
| 6. | St. John's | Halifax |
| 7. | St. John's | Kitchener |
| 8. | Chicoutimi-Jonquiere | Montreal |
| 9. | Quebec City | Montreal |
| 10. | Halifax | Ottawa-Hull |
| 11. | Chicoutimi-Jonquiere | Quebec City |
| 12. | Hamilton | Toronto |
| 13. | Kitchener | Tornoto |
| 14. | London | Toronto |
| 15. | Montreal | Toronto |
| 16. | St. Catharines-Niagara | Toronto |
| 17. | St. John's | Toronto |
| 18. | Sudbury | Toronto |
| 19. | Thunder Bay | Toronto |
| 20. | Vancouver | Toronto |
| 21. | Windsor | Toronto |
| 22. | Calgary | Vancouver |
| 23. | Edmonton | Vancouver |
| 24. | Victoria | Vancouver |
| 25. | Winnipeg | Vancouver |
| 26. | Thunder Bay | Winnipeg |

TABLE 7

22 migration streams which are overpredicted (-)

| | From | To |
|---|---|---|
| 1. | Hamilton | Montreal |
| 2. | Kitchener | Montreal |
| 3. | London | Montreal |
| 4. | Regina | Montreal |
| 5. | St. Catharines-Niagara | Montreal |
| 6. | Saint John | Montreal |
| 7. | Saskatoon | Montreal |
| 8. | Sudbury | Montreal |
| 9. | Thunder Bay | Montreal |
| 10. | Toronto | Montreal |
| 11. | Windsor | Montreal |
| 12. | Hamilton | Ottawa-Hull |
| 13. | Hamilton | Quebec City |
| 14. | Kitchener | Quebec City |
| 15. | London | Quebec City |
| 16. | Ottawa-Hull | Quebec City |
| 17. | St. Catharines-Niagara | Quebec City |
| 18. | Saint John | Quebec City |
| 19. | Sudbury | Quebec City |
| 20. | Toronto | Quebec City |
| 21. | Chicoutimi-Jonquiere | Toronto |
| 22. | Quebec City | Toronto |

(1) Ontario; (2) Quebec; (3) Western Region, including both British Columbia and Prairie Provinces; and (4) Atlantic Provinces, indicating the fact that the intra-regional movements are greater than the inter-regional movements (Figures 5,6,7). Secondly, Quebec is relatively isolated from the other regions.

The most competent intermetropolitan migration region is obviously Ontario. Toronto is the focal point for all other components within the region.

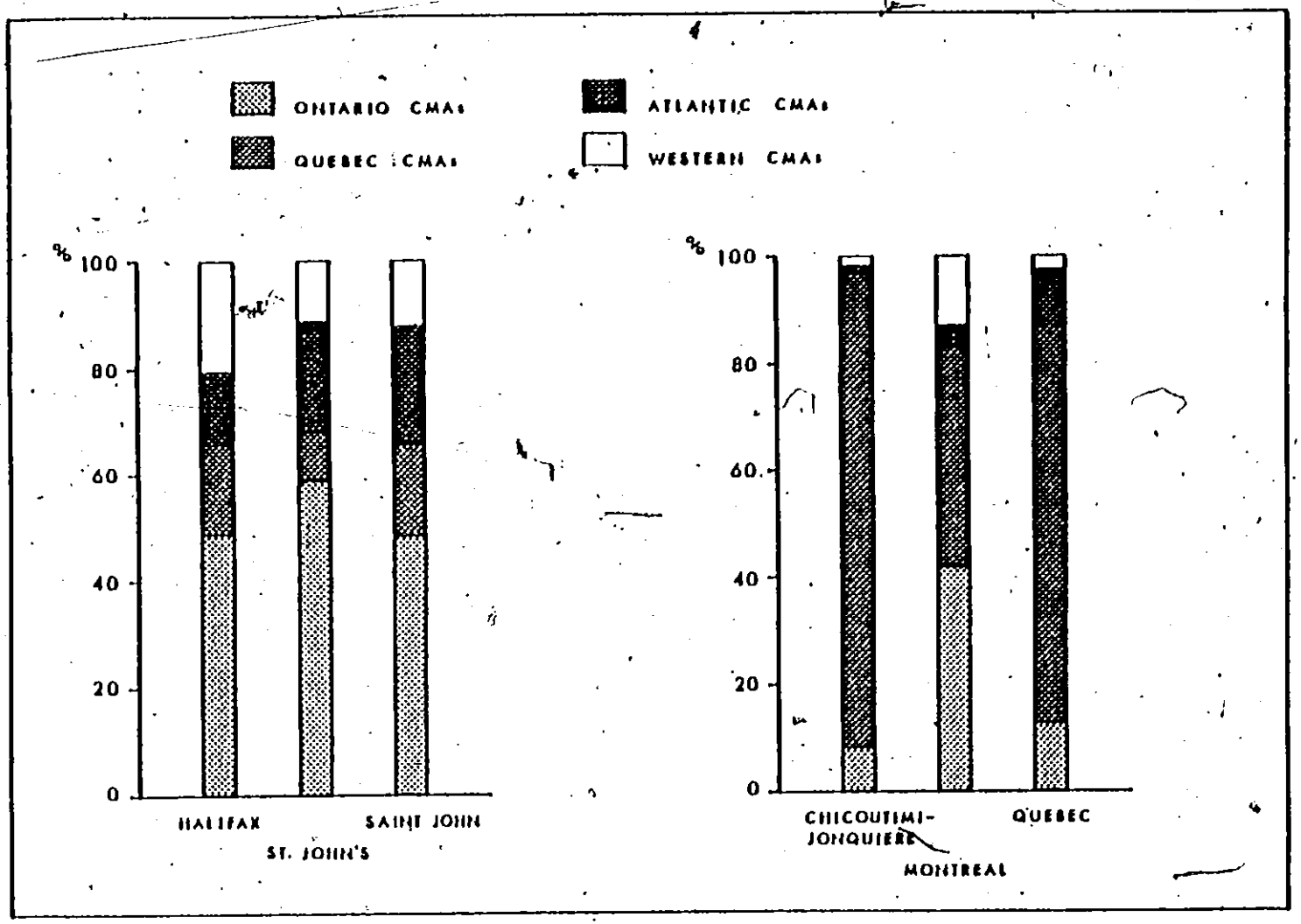
The second, intermetropolitan migration region is the province of Quebec. Montreal, of course, is the chief destination for the components within this region.

The Western Region made up mainly of the intense inter-city movement between Vancouver, Calgary, and Edmonton, is the third region of intermetropolitan movement.

The Maritime Provinces is the fourth region of inter-metropolitan flows. The main focal point for the inter-city movement is Halifax. Since there is no outstanding metropolitan centre in terms of size within this region, each component in this region has generated flows towards other regions, particularly Ontario.

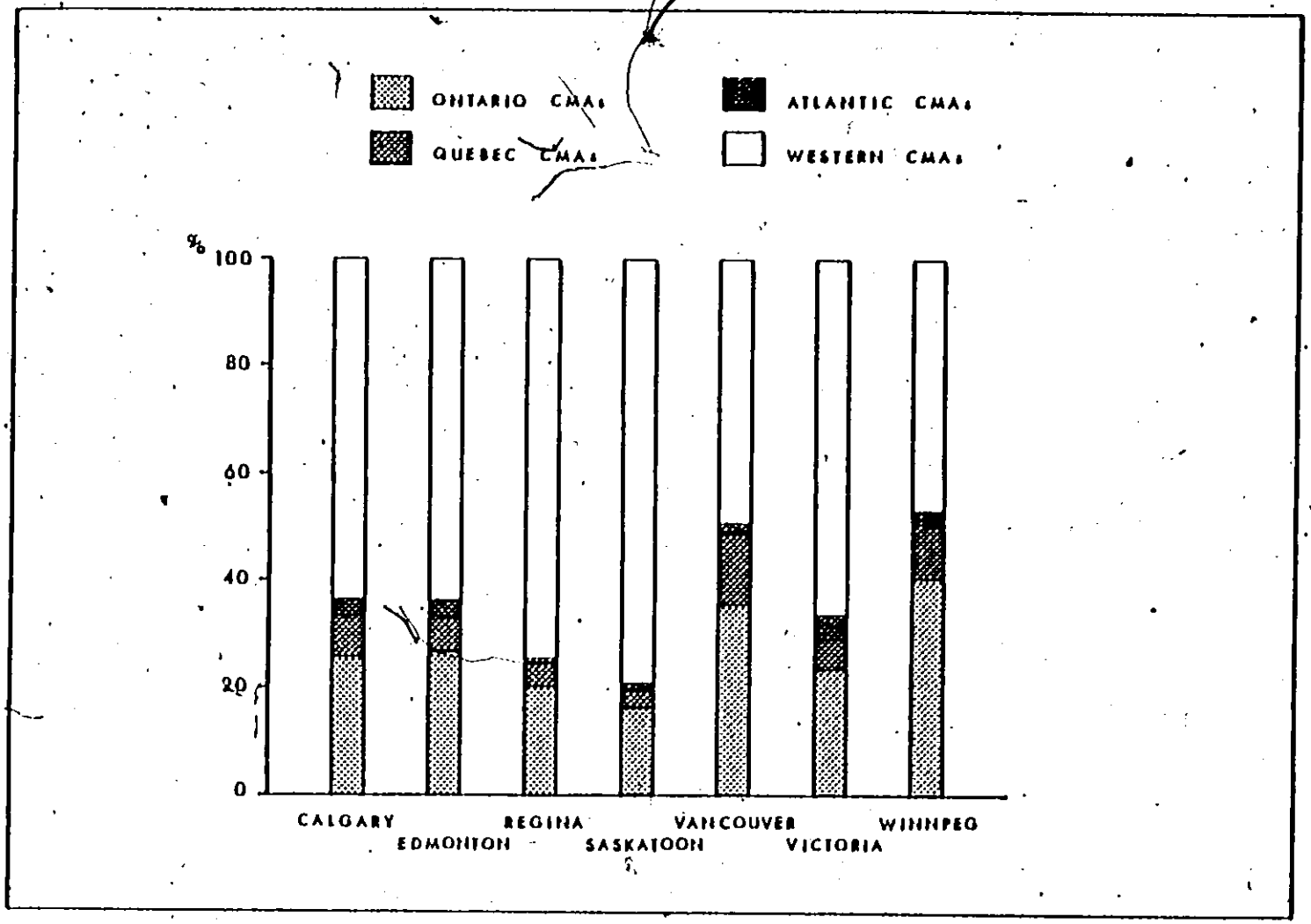
A second distinctive feature is the isolated location of Quebec in relation to the other regions. The obvious explanation for this displacement is the difference in language and culture between largely French Quebec and most of the other regions (Lycan, 1975).

Figure 5: Percentage distribution of in-migrants, by sources, for Atlantic CMA's and Quebec CMA's, 1971-1976.



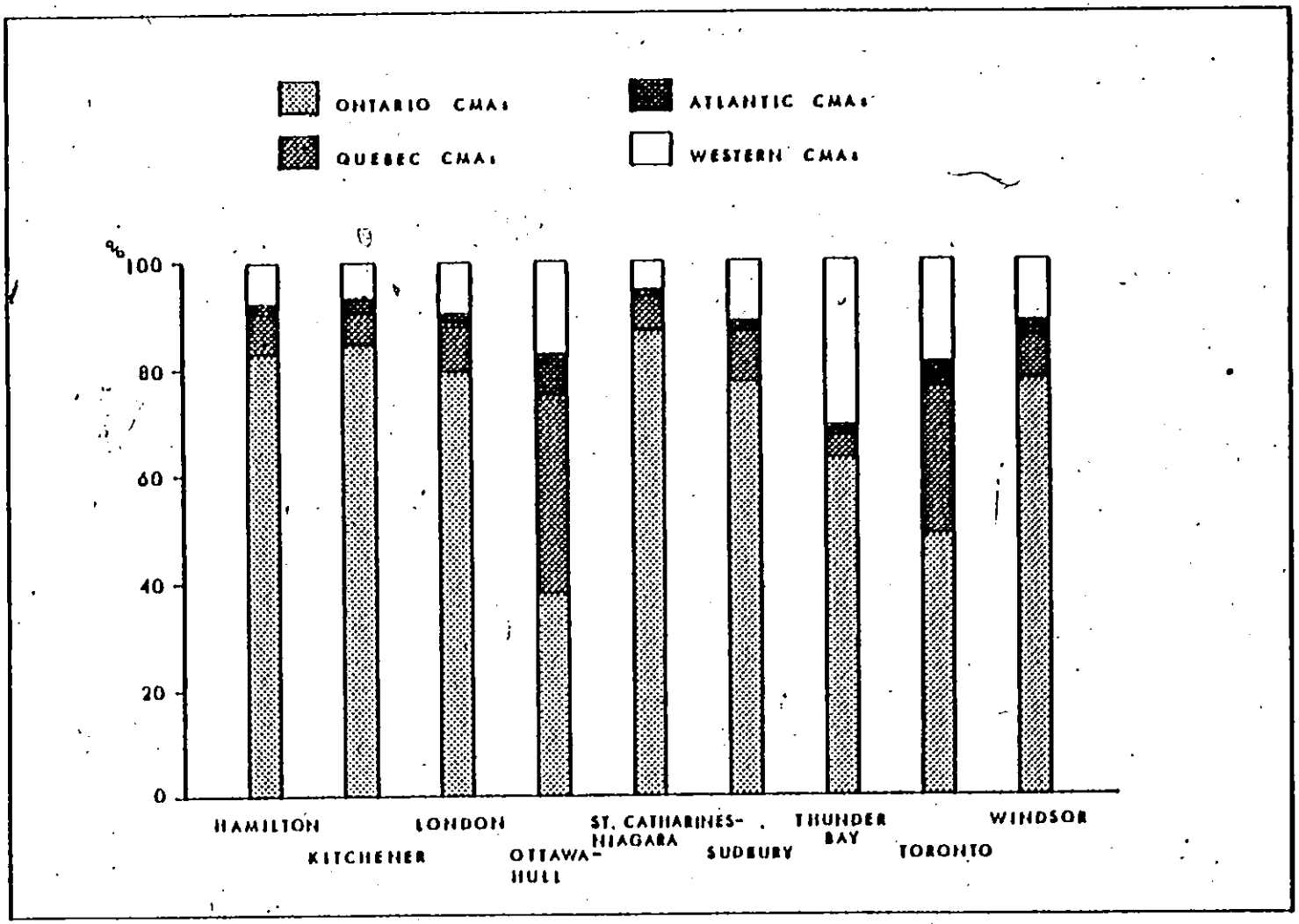

SOURCE: 1976 Census of Canada.

Figure 6: Percentage distribution of in-migrants, by sources, for Western CMA's, 1971-1976.




SOURCE: 1976 Census of Canada.

Figure 7: Percentage distribution of in-migrants, by sources, for Ontario CMA's 1971-1976.




SOURCE: 1976 Census of Canada.

## 4.6 Summary

It appears that the three socio-economic variables in the present study, that is, family income, manufacturing employment and unemployment, do not serve as well in explaining the variance of the intermetropolitan migration streams. The relationship of these variables to migration between metropolitan areas is obviously small. Only the manufacturing employment variable is useful in the multiple regression equation, whereas both the unemployment variable and the family income variable are found not to be related to intermetropolitan migration.

The findings on the migration model indicate that the three "physical" variables, that is, population size, distance and climate, are established to be significant in explaining the variations of migration flows between metropolitan areas. The population variable, combined with the distance and climatic variables, explained nearly half of the total variance of migration rate. So the predominance of the "physical" variables over the economic considerations as the basis of selecting the destination in migration between metropolitan areas is established.

From the study of residuals, two distinctive features of the intermetropolitan migration system are discovered. First, the whole system is mainly divided into four regions, that is, Ontario, Quebec, Western Region and Atlantic Provinces. Secondly, Quebec is found to be relatively isolated from the other regions.

# CHAPTER V

# CONCLUSION

In this chapter, a summary of the findings of the present study is presented. This is followed by a discussion of the limitations of this study and of suggestions for future research.

## 5.1 Summary of the Findings

The first objective of this study was to explore the demographic and socio-economic components of the migrant streams between metropolitan areas in Canada during 1971 and 1976.

The results of the analysis showed that the migration differentials between males and females were not remarkable. This may be due to the fact that the labour-force participation rate of females has been on the increase particularly in the tertiary sector of the urban economy. Also, the migration ratio between males and females varied directly to distance spanned. In general, males tended to have a higher proportion in the long-distance movement, whereas females tended to have a higher ratio in the short-distance movement. Furthermore, nowadays married people, as a family unit, seem to move as much as single persons. All these factors have contributed to the increase in the mobility rate of females and have narrowed the migration

differentials between the two sexes.

The age profiles of intermetropolitan migration flows in Canada during 1971 and 1976 have been similar to those found in past studies (Stone, 1969; Courchene, 1974; McInnis, 1971; Grant and Vanderkamp, 1976). In general, the migration rates started rising from the 15-24 age group, and reached a relatively high peak in the 25-34 age group, and then followed by a gradual decline up to the ages of retirement.

Marked educational differentials have also been observed in the intermetropolitan migration in Canada during 1971 and 1976. Generally, migration rates were higher for the more educated groups. The result of the analysis showed that migrants with university or post-secondary level of education were more mobile than migrants with Grade 9 to Grade 13 or less than Grade 9 education. This indicates that persons with higher education are more aware of economic opportunities elsewhere and are less tied by family and cultural bonds.

The second objective of this research was to investigate what factors account for the variation in migration rates between the CMA's in Canada during 1971 and 1976.

Using the 1976 Census migration data, a stepwise regression analysis was performed, setting the migration rate as a multivariate function of a group of indices of CMA "attractiveness." The result showed that population size, distance, manufacturing employment and climate "explained"

about 51 percent of the total variance in migration rate.

The result of the analysis indicated the significance of the "physical" variables in explaining migration between metropolitan areas. Population size, distance and climate together "explained" about half of the total variance in migration rate.

Although Kelly's climatic index was found to be significant in the present study, it could only "explain" about one percent of the total variance in migration rate. Whereas in Kelly's study, this variable alone accounted for about one-third of the total variance. This might be due to the fact that all the Canadian CMA's are located along a latitudinally narrow elongated belt across the country. This limits the range of climatic variations among the CMA's particularly. So Kelly's climatic index, which consisted of one climatic element, i.e., temperature, might be insufficient for explaining migration between metropolitan areas in Canada. Therefore, in future studies, a more sophisticated index, which accounts for more climatic elements such as humidity, rainfall, sunshine, length of the season with extreme temperatures, wind and so on, would be more appropriate.

In the present study, the performance of the manufacturing employment variable was respectable, whereas other socio-economic variables did not perform as expected. This might be due to the fact that in an affluent society like Canada, given the prevailing levels and distribution of socio-economic opportunities, the "physical" amenities of the

CMA's tend to exert a stronger "pull" force on the potential intermetropolitan migrants. Moreover, most large metropolitan areas have achieved a significant level of "uniformity" in terms of various socio-economic characteristics and attractions, probably because of their large size. As a result, these socio-economic variables may be playing a less important role in the decision-making process of potential migrants who are considering the choice of a particular destination.

The result from the study of residuals has established that first, the intermetropolitan migration system in Canada was divided into four subsystems, that is, Ontario, Quebec, Western Region and Atlantic Provinces; and secondly, that Quebec enjoyed an isolated position within the system.

Despite the regional pattern of intermetropolitan migration, it is hard to find one single model to explain the migration process as a whole. Therefore, it is necessary to study each region individually. However, due to the limited number of metropolitan areas within each region, questionnaire-based opinion surveys rather than macro-scale studies are suggested for future research on migration behaviour and decision-making of the actual migrants.

The findings of this research provide an insight into the Canadian urban dynamics by revealing an important process of urban interaction, i.e., migration, and have some implications for urban planning. The examination of the factors that cause variation in migration among metropolitan

areas will provide some clues for understanding the phenomenon of urban dynamics. This will help the planners to predict the future population redistribution with some degree of certainty.

The study of the components of the intermetropolitan migrant streams will provide some idea of what type of migrants an urban area can expect to receive. With this information, the planners can forecast the future demographic changes in the receiving urban areas more accurately.

## 5.2 Limitations of the Present Study and Direction for Future Research.

The theoretical structure of the present study has not been as strong as might be desired. The hypotheses which were drawn from past research were used. However, these in no way established a developed theoretical framework. This reflects the present state of knowledge and lack of theoretical development in the study of intermetropolitan migration. Since the present study has indicated that factors like population size, distance, manufacturing employment and climate are significant in explaining intermetropolitan migration, it is hoped that this will provide a guideline in selecting other appropriate variables in future studies.

Limitations of data concerning characteristics of intermetropolitan migrants have seriously restricted the scope of the present study, particularly in reference to the

demographic and socio-economic structure of the inter-metropolitan migrant streams. Data on various income groups, occupational groups, ethnic groups, and marital and family status are not available in the 1976 Census. Hence in future studies, if more extensive and refined data are available, further investigation of the above migrant characteristics is necessary in order to gain a thorough understanding of the process of migratory selectivity of intermetropolitan migration.

A large portion of variance of migration rate could not be "explained" by the selected indices of CMA "attractiveness." This indicates that the variables that were used in this study do not represent wholly the "attractiveness" of the CMA's. Therefore, it would be worthwhile for future research to study the possible ways of improving the present conceptual framework of CMA "attractiveness." This may involve either adding new indices of "attractiveness" such as index of living cost, housing availability and cost, per capita general government expenditures, crime index, availability of recreational facilities and so on, or by improving the relatively crude indices (e.g., climatic index) that were used in the present study.

Lastly, the present study brings out various problems associated with the understanding of intermetropolitan migration on a macro-scale. As a matter of fact, metropolitan migration streams include individuals with a wide variety of backgrounds and aspirations, seeking jobs, a

better climate, places with good recreational facilities, better working and living environments, a place to retire, etc. Many different kinds of migrants are actually included within the intermetropolitan migration streams. It is, therefore, hard to isolate factors which affect all these components of migration streams. Hence, better results would be expected by investigating the component migration streams individually through intensive questionnaire interviews, rather than examining them as a whole.

# APPENDICES

APPENDIX I

Intermetropolitan Migration, 1971-1976

| Origin CMA | Destination CMA | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CALGARY | CHICOUTIMI-JONQUIERE | EDMONTON | HALIFAX | HAMILTON | KITCHENER | LONDON | MONTREAL | OTTAWA-HULL | QUEBEC | REGINA | ST. CATHARINES-NIAGARA | SAINT JOHN | ST.JOHN'S | SASKATOON | SUDBURY | THUNDER BAY | TORONTO | VANCOUVER | VICTORIA | WINDSOR | WINNIPEG |
| CALGARY | --- | 0 | 6840 | 275 | 335 | 130 | 170 | 585 | 900 | 40 | 755 | 70 | 70 | 80 | 830 | 40 | 115 | 1770 | 9510 | 1815 | 45 | 1290 |
| CHICOUTIMI-JONQUIERE | 0 | --- | 25 | 40 | 0 | 15 | 10 | 2580 | 605 | 2490 | 10 | 0 | 5 | 0 | 5 | 10 | 10 | 160 | 55 | 35 | 10 | 60 |
| EDMONTON | 9145 | 10 | --- | 280 | 245 | 125 | 300 | 600 | 1255 | 135 | 755 | 85 | 80 | 55 | 750 | 50 | 100 | 1900 | 6370 | 2275 | 80 | 1340 |
| HALIFAX | 660 | 30 | 575 | --- | 365 | 140 | 235 | 1165 | 2200 | 130 | 85 | 160 | 585 | 570 | 55 | 45 | 50 | 1945 | 925 | 900 | 135 | 420 |
| HAMILTON | 715 | 0 | 525 | 295 | --- | 1685 | 3225 | 745 | 1025 | 35 | 105 | 3245 | 150 | 95 | 70 | 285 | 195 | 7180 | 1300 | 160 | 310 | 370 |
| KITCHENER | 445 | 5 | 370 | 250 | 1555 | --- | 3105 | 435 | 805 | 20 | 105 | 3160 | 75 | 110 | 85 | 145 | 80 | 4330 | 655 | 180 | 385 | 240 |
| LONDON | 565 | 20 | 540 | 380 | 1330 | 3285 | --- | 570 | 1205 | 5 | 45 | 495 | 85 | 70 | 60 | 195 | 160 | 5395 | 1025 | 285 | 830 | 325 |
| MONTREAL | 2530 | 1375 | 1835 | 1770 | 1725 | 900 | 1270 | --- | 11515 | 7975 | 255 | 710 | 540 | 280 | 380 | 385 | 145 | 19180 | 6545 | 930 | 370 | 1570 |
| OTTAWA-HULL | 1190 | 105 | 1530 | 1460 | 805 | 650 | 895 | 5615 | --- | 1000 | 370 | 450 | 165 | 195 | 215 | 630 | 170 | 6815 | 2950 | 1615 | 285 | 1170 |
| QUEBEC | 120 | 970 | 180 | 150 | 45 | 45 | 40 | 12940 | 2490 | --- | 30 | 55 | 30 | 20 | 0 | 20 | 10 | 770 | 310 | 85 | 40 | 75 |
| REGINA | 2130 | 0 | 1545 | 65 | 110 | 90 | 90 | 125 | 460 | 20 | --- | 10 | 5 | 5 | 1630 | 25 | 60 | 570 | 1560 | 495 | 20 | 1280 |
| ST. CATHARINES-NIAGARA | 325 | 5 | 235 | 135 | 2220 | 880 | 740 | 290 | 700 | 35 | 45 | --- | 55 | 25 | 25 | 240 | 75 | 4095 | 620 | 220 | 225 | 220 |
| SAINT JOHN | 145 | 0 | 70 | 795 | 95 | 55 | 75 | 145 | 195 | 20 | 20 | 20 | --- | 75 | 10 | 10 | 15 | 620 | 170 | 30 | 25 | 15 |
| ST. JOHN'S | 155 | 5 | 180 | 750 | 100 | 210 | 75 | 315 | 505 | 10 | 15 | 45 | 115 | --- | 40 | 10 | 10 | 1185 | 280 | 90 | 15 | 115 |
| SASKATOON | 2350 | 0 | 2075 | 105 | 40 | 55 | 50 | 160 | 380 | 15 | 1775 | 45 | 30 | 0 | --- | 45 | 65 | 560 | 1535 | 485 | 45 | 1055 |
| SUDBURY | 200 | 20 | 235 | 110 | 605 | 500 | 495 | 535 | 1200 | 35 | 45 | 475 | 45 | 55 | 40 | --- | 320 | 3130 | 375 | 65 | 150 | 175 |
| THUNDER BAY | 325 | 0 | 270 | 40 | 180 | 165 | 200 | 90 | 275 | 5 | 115 | 170 | 15 | 35 | 70 | 170 | --- | 1165 | 510 | 110 | 80 | 985 |
| TORONTO | 5145 | 45 | 3625 | 2735 | 12580 | 7380 | 6015 | 7305 | 9030 | 395 | 575 | 5225 | 905 | 1235 | 410 | 1480 | 1300 | --- | 10950 | 1940 | 1790 | 3005 |
| VANCOUVER | 4580 | 20 | 4170 | 455 | 565 | 255 | 440 | 1955 | 1645 | 95 | 580 | 225 | 95 | 80 | 640 | 125 | 135 | 6740 | --- | 6805 | 140 | 2150 |
| VICTORIA | 835 | 0 | 870 | 575 | 80 | 65 | 110 | 195 | 540 | 30 | 130 | 35 | 5 | 20 | 110 | 10 | 50 | 665 | 5000 | --- | 30 | 515 |
| WINDSOR | 400 | 15 | 335 | 175 | 800 | 535 | 1485 | 340 | 790 | 35 | 20 | 380 | 50 | 25 | 40 | 155 | 125 | 3570 | 680 | 135 | --- | 195 |
| WINNIPEG | 4010 | 25 | 3155 | 525 | 460 | 305 | 295 | 1230 | 1655 | 55 | 1245 | 150 | 105 | 115 | 1010 | 120 | 640 | 3530 | 5780 | 1325 | 210 | --- |

SOURCE: Statistics Canada, 1976 Census.

## APPENDIX II

Total Number of In-migrants, Out-Migrants and Net-Migrants, population aged 15 and over, for 22 Census Metropolitan Areas 1971-1976.

| | Total In-migrants | Total Out-migrants | Total Net-migrants |
|---|---|---|---|
| Calgary | 35970 | 21665 | 14305 |
| Chicoutimi-Jonquiere | 2650 | 6105 | -3455 |
| Edmonton | 29185 | 26095 | 3090 |
| Halifax | 11465 | 11375 | 90 |
| Hamilton | 24240 | 19935 | 4305 |
| Kitchener | 15470 | 11940 | 3530 |
| London | 15320 | 14870 | 450 |
| Montreal | 37780 | 61965 | -24185 |
| Ottawa-Hull | 39375 | 27680 | 11695 |
| Quebec | 12580 | 18425 | -5845 |
| Regina | 7080 | 10295 | -3215 |
| St. Catharines-Niagara | 12630 | 11210 | 1420 |
| Saint John | 3210 | 2405 | 805 |
| St. John's | 3145 | 4225 | -1080 |
| Saskatoon | 6275 | 10870 | -4595 |
| Sudbury | 3995 | 8810 | -4815 |
| Thunder Bay | 3830 | 4995 | -1165 |
| Toronto | 72855 | 83070 | -10215 |
| Vancouver | 52705 | 29895 | 22810 |
| Victoria | 19980 | 9670 | 10310 |
| Windsor | 5220 | 10085 | -4865 |
| Winnipeg | 16570 | 25945 | -9375 |
| TOTAL | 431530 | 431530 | |

SOURCE: Statistics Canada, 1976 Census.

# APPENDIX III

## Total Number of In-migrants, population aged 15 and over, by sex, for 22 Census Metropolitan Areas 1971-1976

| | Male In | Female In |
|---|---|---|
| Calgary | 18280 | 17690 |
| Chicoutimi-Jonquiere | 1370 | 1280 |
| Edmonton | 15080 | 14110 |
| Halifax | 5680 | 5780 |
| Hamilton | 12055 | 12165 |
| Kitchener | 7780 | 7665 |
| London | 7325 | 7990 |
| Montreal | 18945 | 18850 |
| Ottawa-Hull | 19560 | 19825 |
| Quebec | 6310 | 6260 |
| Regina | 3625 | 3495 |
| St. Catharines-Niagara | 6105 | 6525 |
| Saint John | 1595 | 1630 |
| St. John's | 1670 | 1475 |
| Saskatoon | 3130 | 3120 |
| Sudbury | 1905 | 2095 |
| Thunder Bay | 1930 | 1895 |
| Toronto | 35580 | 37285 |
| Vancouver | 26000 | 26685 |
| Victoria | 9765 | 10175 |
| Windsor | 2580 | 2655 |
| Winnipeg | 8360 | 8205 |

SOURCE: Statistics Canada, 1976 Census.

# APPENDIX IV

Total Number of Out-migrants, population aged 15 and over, by sex, for 22 Census Metropolitan Areas 1971-1976

| | Male Out | Female Out |
|---|---|---|
| Calgary | 10850 | 10840 |
| Chicoutimi-Jonquiere | 2945 | 3150 |
| Edmonton | 13290 | 12825 |
| Halifax | 5760 | 5640 |
| Hamilton | 9940 | 9990 |
| Kitchener | 6270 | 5670 |
| London | 7265 | 7605 |
| Montreal | 30550 | 31420 |
| Ottawa-Hull | 13765 | 13925 |
| Quebec | 8820 | 9600 |
| Regina | 4985 | 5330 |
| St. Catharines-Niagara | 5400 | 5790 |
| Saint John | 1185 | 1220 |
| St. John's | 1985 | 2205 |
| Saskatoon | 5165 | 5690 |
| Sudbury | 4570 | 4235 |
| Thunder Bay | 2410 | 2585 |
| Toronto | 41855 | 41185 |
| Vancouver | 14950 | 14940 |
| Victoria | 4760 | 4910 |
| Windsor | 5045 | 5035 |
| Winnipeg | 12865 | 13065 |

SOURCE: Statistics Canada, 1976 Census.

# APPENDIX V

Total Number of In-migrants, population aged 15 and over, by age groups, for 22 Census Metropolitan Areas 1971-1976

| | 15-24 | 25-34 | 35-44 | 45-54 | 54-65 | 65+ |
|---|---|---|---|---|---|---|
| Calgary | 10745 | 14555 | 5490 | 2915 | 1335 | 960 |
| Chicoutimi-Jonquiere | 480 | 1520 | 380 | 130 | 80 | 55 |
| Edmonton | 9225 | 11365 | 4550 | 2555 | 850 | 625 |
| Halifax | 3175 | 4695 | 2030 | 945 | 435 | 205 |
| Hamilton | 5675 | 10350 | 3915 | 2095 | 1180 | 1035 |
| Kitchener | 4890 | 6020 | 2145 | 1225 | 645 | 535 |
| London | 4755 | 5955 | 2100 | 1215 | 625 | 665 |
| Montreal | 9330 | 15435 | 6690 | 3625 | 1530 | 1170 |
| Ottawa-Hull | 9955 | 16000 | 6900 | 3935 | 1485 | 1205 |
| Quebec | 3360 | 5595 | 1990 | 880 | 370 | 390 |
| Regina | 1965 | 3090 | 1095 | 535 | 230 | 195 |
| St. Catharines-Niagara | 2785 | 4815 | 1940 | 1325 | 770 | 970 |
| Saint John | 735 | 1310 | 600 | 265 | 155 | 135 |
| St. John's | 645 | 1570 | 475 | 245 | 110 | 95 |
| Saskatoon | 1870 | 2720 | 940 | 405 | 205 | 165 |
| Sudbury | 1055 | 1775 | 555 | 315 | 135 | 120 |
| Thunder Bay | 980 | 1595 | 745 | 330 | 105 | 85 |
| Toronto | 20820 | 28200 | 10950 | 7295 | 3110 | 2485 |
| Vancouver | 13980 | 20030 | 8050 | 5150 | 2975 | 2505 |
| Victoria | 4800 | 5900 | 2705 | 2330 | 1935 | 2285 |
| Windsor | 1260 | 2220 | 795 | 410 | 220 | 305 |
| Winnipeg | 4385 | 6195 | 2985 | 1590 | 745 | 665 |

SOURCE: Statistics Canada, 1976 Census.

# APPENDIX VI

Total Number of Out-Migrants, population aged 15 and over, by age groups, for 22 Census Metropolitan Areas 1971-1976

| | 15-24 | 25-34 | 35-44 | 45-54 | 55-65 | 65+ |
|---|---|---|---|---|---|---|
| Calgary | 5910 | 8325 | 3760 | 2155 | 865 | 635 |
| Chicoutimi-Jonquiere | 2505 | *2085 | 730 | 400 | 215 | 160 |
| Edmonton | 6625 | 10290 | 4475 | 2520 | 1285 | 910 |
| Halifax | 3215 | 4465 | 2040 | 1065 | 315 | 250 |
| Hamilton | 5775 | 7905 | 2865 | 1685 | 855 | 845 |
| Kitchener | 3245 | 5875 | 1370 | 755 | 350 | 345 |
| London | 3880 | 6810 | 2115 | 1235 | 535 | 350 |
| Montreal | 15730 | 22190 | 10605 | 7185 | 3310 | 2975 |
| Ottawa-Hull | 7365 | 10695 | 4630 | 2885 | 1195 | 915 |
| Quebec | 5125 | 7180 | 3025 | 1705 | 795 | 610 |
| Regina | 3315 | 3425 | 1690 | 960 | 470 | 440 |
| St. Catharines-Niagara | 4585 | *3815 | 1145 | 780 | 440 | 435 |
| Saint John | 835 | 910 | 330 | 150 | 80 | *85 |
| St. John's | 1675 | *1475 | 545 | 245 | 155 | 110 |
| Saskatoon | 3355 | 4190 | 1515 | 915 | 460 | 395 |
| Sudbury | 2935 | 3440 | 1190 | 635 | 350 | 240 |
| Thunder Bay | 1605 | 1890 | 685 | 400 | 215 | 205 |
| Toronto | 18740 | 36520 | 13655 | 7235 | 3945 | 2970 |
| Vancouver | 7530 | 11930 | 4800 | 2690 | 1355 | *1560 |
| Victoria | 3055 | 3235 | 1275 | 870 | 425 | *800 |
| Windsor | 3280 | 4235 | 1220 | 640 | 320 | *425 |
| Winnipeg | 6585 | 10025 | 4360 | 2605 | 1295 | 1195 |

SOURCE: Statistics Canada, 1976 Census.

# APPENDXI VII

Total Number of In-migrants, population aged 15 and over, by education levels, for 22 Census Metropolitan Areas, 1971-1976

| | Less than Grade 9 | Grade 9-13 | Post Secondary | University |
|---|---|---|---|---|
| Calgary | 2025 | 14880 | 7515 | 11565 |
| Chicoutimi-Jonquiere | 360 | 820 | 585 | 905 |
| Edmonton | 1470 | 11850 | 6020 | 9835 |
| Halifax | 760 | 4275 | 2230 | 4220 |
| Hamilton | 1935 | 9675 | 4980 | 7635 |
| Kitchener | 1395 | 5740 | 2710 | 5665 |
| London | 835 | 5275 | 2875 | 6335 |
| Montreal | 3140 | 12830 | 6260 | 15585 |
| Ottawa-Hull | 1640 | 11750 | 6115 | 19920 |
| Quebec | 1285 | 4180 | 2355 | 4780 |
| Regina | 365 | 2780 | 1420 | 2545 |
| St. Catharines-Niagara | 1595 | 5465 | 2300 | 3295 |
| Saint John | 410 | 1355 | 615 | 830 |
| St. John's | 340 | 1100 | 590 | 1070 |
| Saskatoon | 405 | 2370 | 1230 | 2295 |
| Sudbury | 380 | 1655 | 700 | 1275 |
| Thunder Bay | 255 | 1535 | 730 | 1325 |
| Toronto | 3745 | 23770 | 13065 | 32260 |
| Vancouver | 3225 | 20475 | 10825 | 18170 |
| Victoria | 1465 | 8040 | 3940 | 6540 |
| Windsor | 605 | 1960 | 845 | 1830 |
| Winnipeg | 1250 | 6695 | 3040 | 5550 |

SOURCE: Statistics Canada, 1976 Census.

# APPENDIX VIII

Total Number of Out-migrants, population aged 15 and over, by education levels, for 22 Census Metropolitan Areas. 1971-1976

| | Less than Grade 9 | Grade 9-13 | Post Secondary | University |
|---|---|---|---|---|
| Calgary | 1190 | 8705 | 4300 | 7490 |
| Chicoutimi-Jonquiere | 410 | 1950 | 1390 | 2360 |
| Edmonton | 1250 | 10060 | 5530 | 9300 |
| Halifax | 690 | 4475 | 2095 | 4155 |
| Hamilton | 1455 | 7290 | 3910 | 7265 |
| Kitchener | 730 | 3550 | 2090 | 5590 |
| London | 645 | 5035 | 2605 | 6625 |
| Montreal | 4675 | 20965 | 10245 | 26065 |
| Ottawa-Hull | 1090 | 9530 | 4800 | 12285 |
| Quebec | 1770 | 6370 | 3215 | 7040 |
| Regina | 665 | 4215 | 1895 | 3545 |
| St. Catharines-Niagara | 680 | 3930 | 2460 | 4145 |
| Saint John | 130 | 860 | 535 | 895 |
| St. John's | 355 | 1535 | 815 | 1550 |
| Saskatoon | 550 | 3685 | 2225 | 4390 |
| Sudbury | 935 | 3550 | 1560 | 2785 |
| Thunder Bay | 365 | 1855 | 875 | 1900 |
| Toronto | 6195 | 31010 | 16155 | 29730 |
| Vancouver | 2085 | 11810 | 5475 | 10505 |
| Victoria | 640 | 4040 | 1915 | 3085 |
| Windsor | 675 | 3465 | 1835 | 4115 |
| Winnipeg | 1705 | 10590 | 5020 | 8610 |

SOURCE: Statistics Canada, 1976 Census.

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